The PHOTOFACT Servicer

SET 457 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ SEPT., 1959

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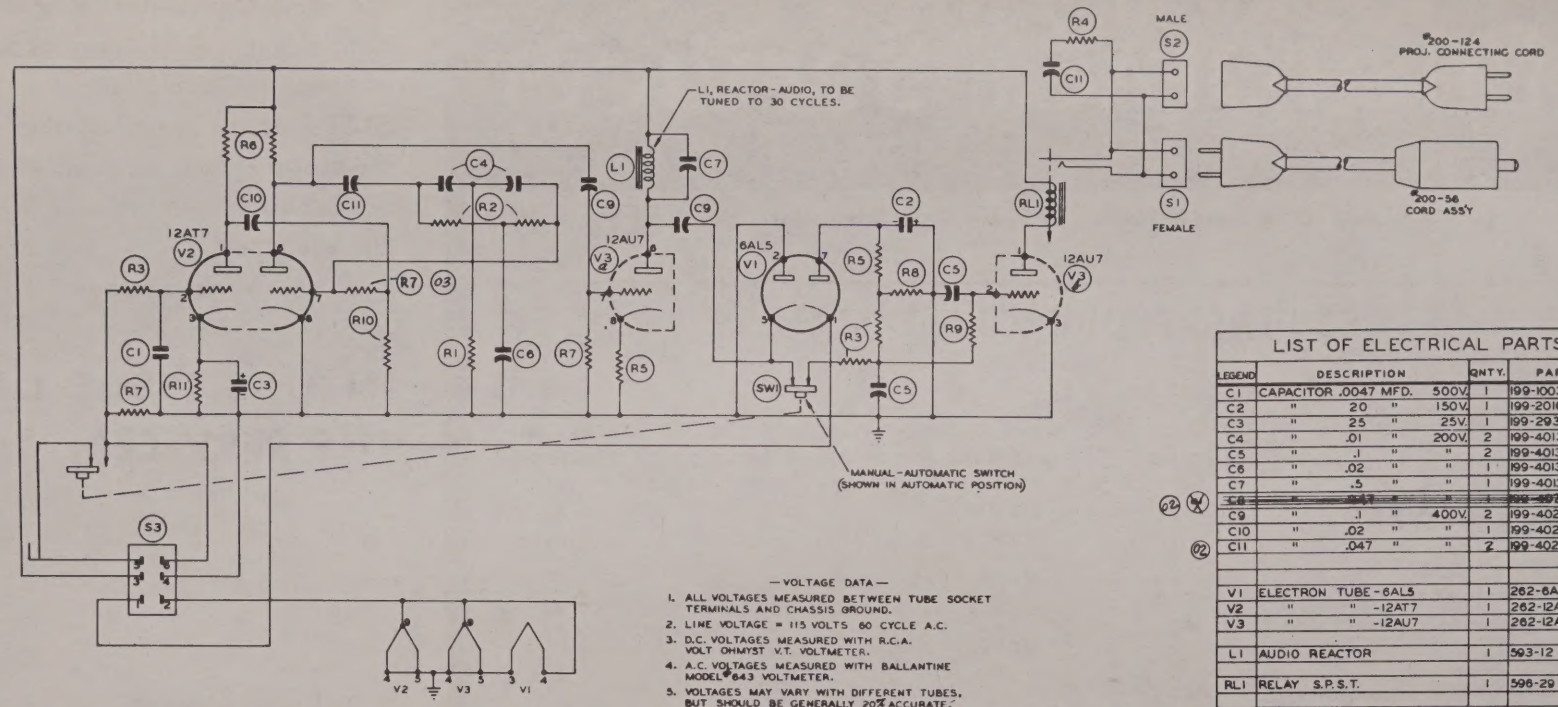
This Servicer provides you with essential data on other models or special equipment not covered in standard PHOTOFACT folders. The schematics and supplementary data included here will be of valuable help to you in servicing this equipment.

IN THIS ISSUE OF THE SERVICER:

Dukane Model 9A310

Dukane Models 14A190, 14A190-A, 14A290

Dukane Model 14A230



— VOLTAGE DATA —

1. ALL VOLTAGES MEASURED BETWEEN TUBE SOCKET TERMINALS AND CHASSIS GROUND.
2. LINE VOLTAGE = 115 VOLTS 60 CYCLE A.C.
3. D.C. VOLTAGES MEASURED WITH R.C.A. VOLT OHMYST V.T. VOLTMETER.
4. A.C. VOLTAGES MEASURED WITH BALLANTINE MODEL *643 VOLTMETER.
5. VOLTAGES MAY VARY WITH DIFFERENT TUBES, BUT SHOULD BE GENERALLY 20% ACCURATE.
6. VOLUME CONTROL ON AMPLIFIER SET AT MAXIMUM.
7. AUTOMATIC - MANUAL SWITCH IN AUTOMATIC POSITION.
8. A.C. 30 CYCLE INPUT AND A.C. 50 CYCLE INPUT VOLTAGES ARE MEASURED WHILE STANDARD RECORDING *808-5 IS BEING PLAYED.

TUBE VOLTAGES

TUBE TYPE		SOCKET PIN NUMBERS								
		1	2	3	4	5	6	7	8	9
V1 6AL5	D.C. NO SIGNAL							-150		
	A.C. 30~ INPUT	105		0	*6.3					
	A.C. 50~ INPUT	105		0	*6.3					
V2 12AT7	D.C. NO SIGNAL	170		4.8			64	-1.0		
	A.C. 30~ INPUT	80			0	0	65	4.7		*6.3
	A.C. 50~ INPUT	50			0	0	20	40		*6.3
V3 12AU7	D.C. NO SIGNAL	285	-56				285		18	
	A.C. 30~ INPUT				0	0	114	65		*6.3
	A.C. 50~ INPUT				0	0	10.0	20		*6.3

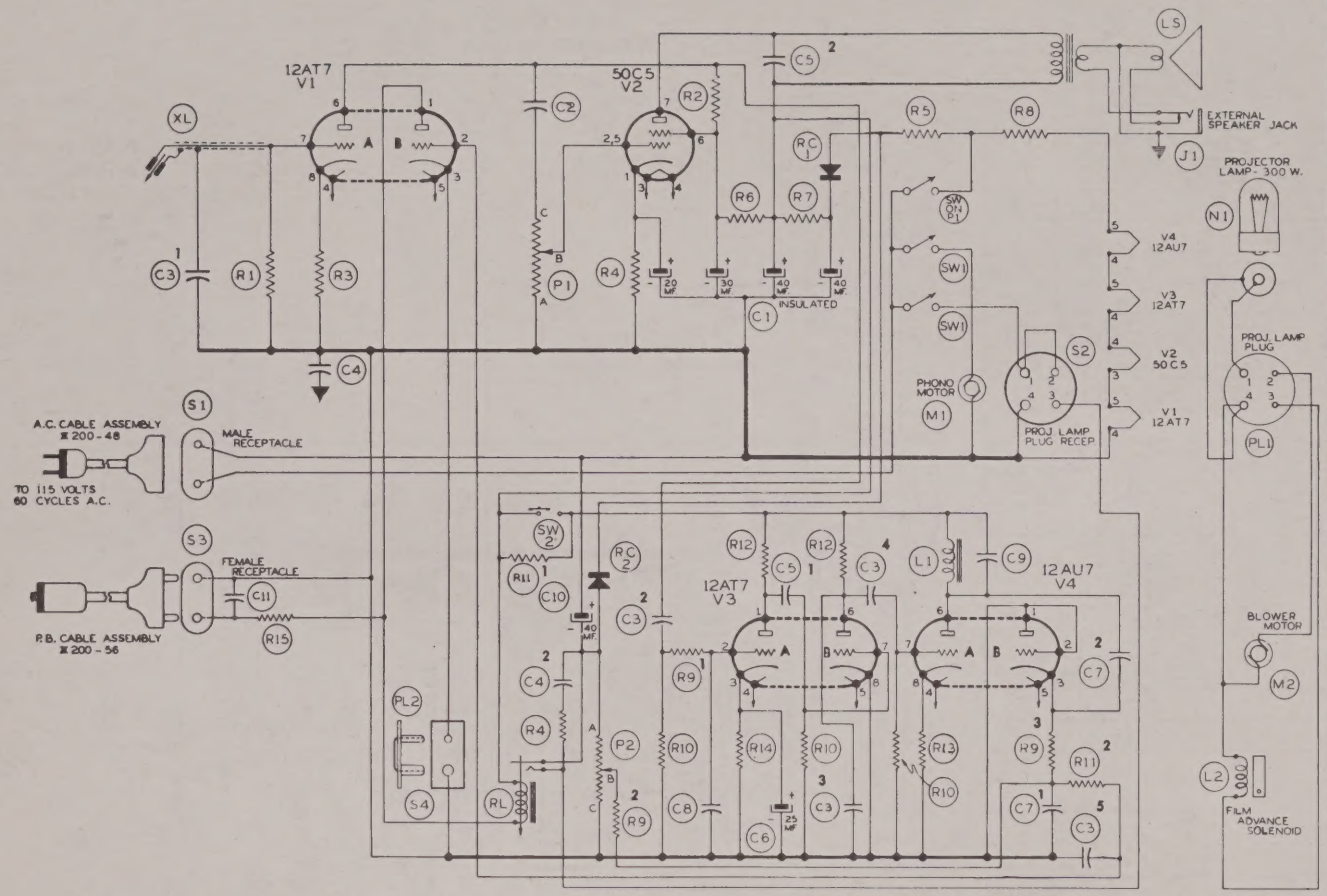
* FILAMENT VOLTAGES

LIST OF ELECTRICAL PARTS

LEGEND	DESCRIPTION	QNTY.	PART NO.
C1	CAPACITOR .0047 MFD. 500V.	1	199-1003-472
C2	" 20 " 150V.	1	199-2016-206
C3	" 25 " 25V.	1	199-2931-
C4	" .01 " 200V.	2	199-4013-103
C5	" .1 " "	2	199-4013-104
C6	" .02 " "	1	199-4013-203
C7	" .5 " "	1	199-4013-504
(02)(X)	~~C8 " .047 " "~~	~~1~~	~~199-4025-473~~
C9	" .1 " 400V.	2	199-4025-104
C10	" .02 " "	1	199-4025-203
(02) C11	" .047 " "	2	199-4025-473
V1	ELECTRON TUBE - 6AL5	1	262-6AL5
V2	" " -12AT7	1	262-12AT7
V3	" " -12AU7	1	262-12AU7
L1	AUDIO REACTOR	1	593-12
RL1	RELAY S.P.S.T.	1	596-29
S1	RECEPTACLE	1	597-60
S2	"	1	597-97
S3	"	1	597-12700
R1	RESISTOR 270K OHM 1/2 WATT	1	600-0073-274
R2	" 510K " " "	2	600-0073-514
R3	" 1.2 MEG. " " "	3	600-0080-125
R4	" 150 " " "	1	600-0080-151
R5	" 15K " " "	2	600-0080-153
R6	" 180K " " "	2	600-0080-184
(03) R7	" 2.7 MEG. " " "	3	600-0080-275
R8	" 100K " " "	1	600-0080-104
R9	" 470K " " "	1	600-0080-474
(08) R10	" 4.7 MEG. " " "	1	600-0080-475
R11	" 5600 " " "	1	600-0080-562
SW1	SWITCH	1	680-259

DUKANE MODEL 9A310

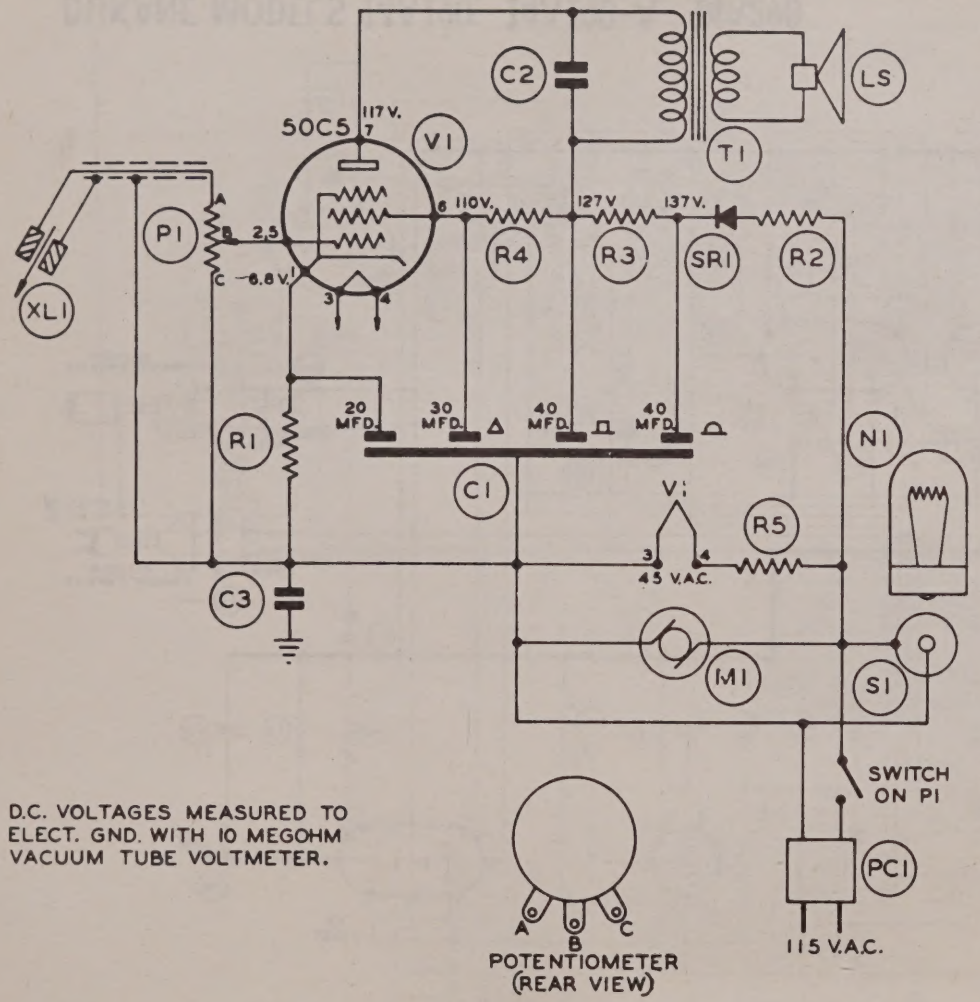
Schematic Diagram Courtesy of Dukane Corporation



LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QNTY	PART NO.
C 1	CAPACITOR - ELECTROLYTIC		
	40-40-30 MFD 150 V		
	20 " 25 V	1	199-2915
C 2	CAPACITOR .003 " 400 V	1	199-4020-302
C 3	" .1 " 400 V	5	199-4021-104
C 4	" .05 " 400 V	1	199-4021-503
C 5	" .02 " 600 V	1	199-4031-203
C 6	" 25 " 25 V	1	199-2001-256
C 7	" .25 " 400 V	2	199-4022-254
C 8	" .005 " 600 V	1	199-4030-502
C 9	" .6 " 200 V	1	199-9021-000
C 10	" 40 " 250 V	1	199-2022-406
C 11	" .03 " 400 V	1	199-4021-303
V1, V3	ELECTRON TUBE	2	262-12AT7
V 2	ELECTRON TUBE	1	262-50C5
V 4	ELECTRON TUBE	1	262-12AU7
J 1	JACK - FOR EXTERNAL SPKR.	1	415-4
PL 1	PLUG - PROJ. LAMP	1	570-3052
RC 1	RECTIFIER - SELENIUM	1	595-7
RC 2	RECTIFIER - SELENIUM	1	595-4
S 1	RECEPTACLE - A.C. LINE	1	597-61
S 3	" - PUSH BUTTON	1	597-60
S 4	" - TEST BIAS	1	597-7203
R 1	RESISTOR 1.5 MEG. OHM ½ W.	1	600-0080-155
R 2	" 180 K " "	1	600-0080-184
R 3	" 3900 " "	1	600-0080-392
R 4	" 150 " 1 W.	2	600-0116-151
R 5	" 22 " "	1	600-0116-220
R 6	" 4700 " "	1	600-0116-472
R 7	" 250 " 5 W.	1	600-1008-251
R 8	" 200 " 10 W.	1	600-1011-201
R 9	" 1.2 MEG. " ½ W.	3	600-0080-125
R 10	" 2.7 " " "	3	600-0080-275
R 11	" 470 K " "	2	600-0080-474
R 12	" 68 K " "	2	600-0080-683
R 13	" 12000 " 1 W.	1	600-0116-123
R 14	" 5600 " "	1	600-0116-562
R 15	" 6800 " "	1	600-0116-682
P 1	POTENTIOMETER .5 MEG. & SW.	1	601-41
P 2	" 100 K	1	601-56
S 2	SOCKET - FOR PROJECTOR	1	635-03-08628
SW 1	SWITCH - S.P.S.T. TOGGLE	2	680-99
SW 2	" - S.P.S.T. SLIDE	1	680-23
RL	RELAY - S.P.S.T.	1	596-24 or 596-29
PL 2	PLUG - BIAS CHECK	1	570-80
L 1	INDUCTANCE -	1	593-12
L 2	" - SOLENOID	1	859-1
XL	PICKUP CARTRIDGE - CERAMIC	1	563-53
M 1	MOTOR - PHONO	1	494-50
M 2	" - BLOWER	1	494-41
N 1	PROJECTOR LAMP 300 WATT	1	456-17
L S	LOUDSPEAKER & TRANSFORMER	1	S-11025

DUKANE MODELS 14A190, 14A190-A, 14A290

Schematic Diagram Courtesy of Dukane Corporation



D.C. VOLTAGES MEASURED TO ELECT. GND. WITH 10 MEGOHM VACUUM TUBE VOLTMETER.

LIST OF ELECTRICAL PARTS			
LEGEND	DESCRIPTION	QNTY	PART NO.
C1	CAPACITOR-ELECTROLYTIC		
	40-40-30 MFD. 150 V.		
	20 " 25 V.	1	199-2915
C2	" .02 " 200 V.	1	199-4015-203
C3	" .047 "	1	199-4025-473
PC1	POWER CORD	1	200-111
V1	ELECTRON TUBE	1	262-50C5
N1	PROJECTOR LAMP 100 WATT	1	456-4
M1	MOTOR-PHONO	1	494-57
XL1	PICKUP CARTRIDGE	1	563-82
S1	RECEPTACLE PROJ. LAMP	1	597-65
SR1	SELENIUM RECTIFIER	1	595-23
R1	RESISTOR 150 OHM 1 W.	1	600-0116-151
R2	" 22 " "	1	600-0116-220
R3	" 220 " "	1	600-0116-221
R4	" 4700 " "	1	600-0116-472
R5	" 450 " 10 W.	1	600-1013-451
P1	POTENTIOMETER 1 MEG.	1	601-115
LS	LOUDSPEAKER 3.2 OHMS	1	645-16
T1	TRANSFORMER	1	710-2072

DUKANE MODEL 14A230

Schematic Diagram Courtesy of Dukane Corporation

PHOTOFACT* Folder with CIRCUITRACE*

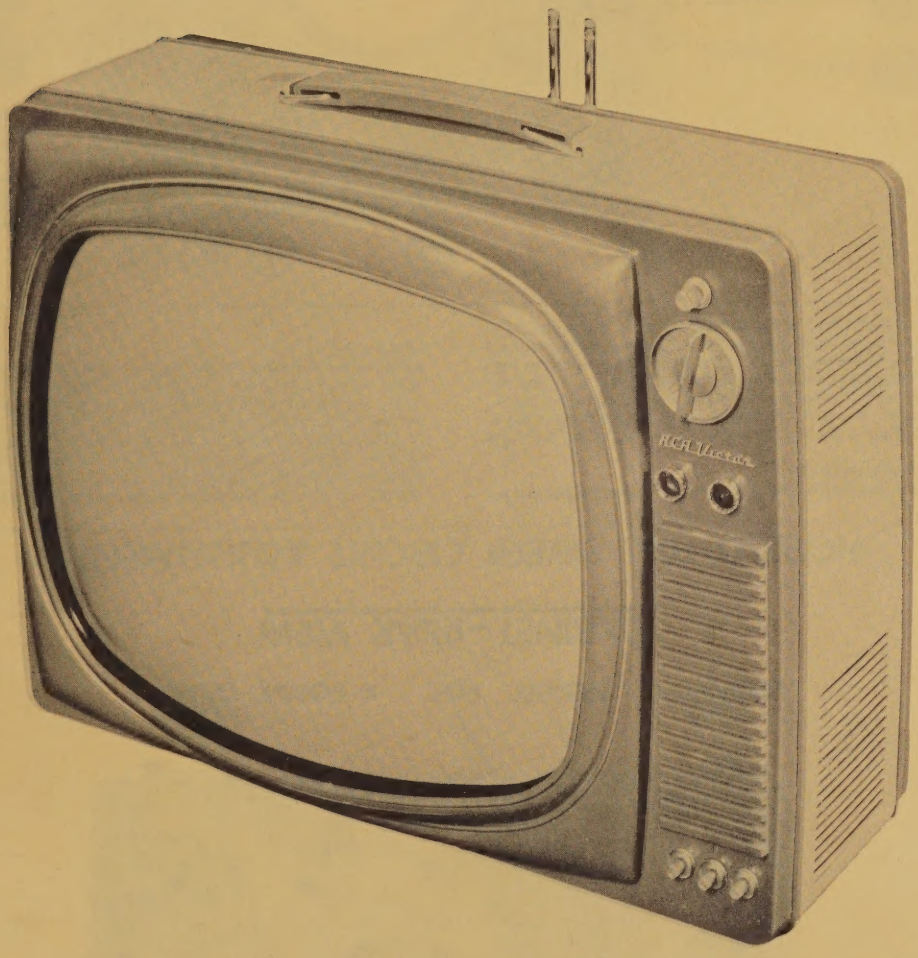
RCA VICTOR MODELS 170P048, U,
170P049, U, 170P060, U, 170P061, U,
170P063, U, 170P064, U (Ch. KCS126A, B)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

RCA VICTOR MODELS 170P048, U,
170P049, U, 170P060, U, 170P061, U,
170P063, U, 170P064, U (Ch. KCS126A, B)



MODEL 170P048 (Ch. KCS126A)

RCA VICTOR MODELS 170P048, U,
170P049, U, 170P060, U, 170P061, U,
170P063, U, 170P064, U (Ch. KCS126A, B)

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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PHOTOFACT* Folder with CIRCUITRACE*

RCA VICTOR MODELS 170P048, U, 170P049, U, 170P060, U, 170P061, U, 170P063, U, 170P064, U (Ch. KCS126A, B)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 170P048

1. Remove 8 screws holding rear cover. Remove the rear cover. Disconnect antenna leads.
2. Remove 7 push-on type knobs from the front.
3. Remove 3 screws under the bottom of the front mask.
4. Loosen 2 hex head bolts at upper inside corners of the cabinet.
5. Pull the bottom of the front mask out 1/2 " to 3/4" and lift up and off.
6. Remove speaker leads, picture socket, yoke clamp, yoke and HV lead.
7. Remove 3 screws holding the small control bracket at the bottom.
8. Remove 2 nuts holding the top of the chassis at the top of the cabinet.
9. Remove 4 chassis bolts from the bottom of the cabinet.
10. Remove chassis.

MODEL 170P048 (Ch. KCS126A)

TRADE NAME	RCA Victor	MODELS	CHASSIS
		170P048, 170P049, 170P060, 170P061, 170P063, 170P064	KCS126A
		170P048U, 170P049U, 170P060U, 170P061U, 170P063U, 170P064U	KCS126B
MANUFACTURER	Radio Corporation of America, RCA Victor Tele. Div., Camden 8, N.J.		
TYPE SET	Television Receiver		
TUBES	VHF-Seventeen, UHF-Eighteen		
POWER SUPPLY	110-120 Volts AC, 60 Cycle	RATING 190 Watts, 1.8 Amp. @ 117 Volts AC	
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)		

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

See steps 1 thru 6 of "Chassis Removal Instructions".

FUSE

Two fuse wires are used for filament protection. (For location, see M1 and M2 in photo "Chassis Bottom View".)

FUSE DEVICE

A 6.5Ω fusible resistor (R72) is used for horizontal sweep circuit protection. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove Channel Selector knob.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 4 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

Coarse adjustment of the Horizontal Hold is accomplished by the proper setting of the Horizontal Stabilizing slug. (For location, see "Tube Placement Chart".)

WIDTH

The width may be varied by a Width coil. (For location, see "Tube Placement Chart".)

HORIZONTAL DRIVE

The horizontal drive may be varied by a Horizontal Drive trimmer. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

RCA VICTOR MODELS 170P048, U, 170P049, U, 170P060, U, 170P061, U, 170P063, U, 170P064, U (Ch. KCS126A, B)

RCA VICTOR MODELS 170P048, U, 170P049, U, 170P060, U, 170P061, U, 170P063, U, 170P064, U (Ch. KCS126A, B)

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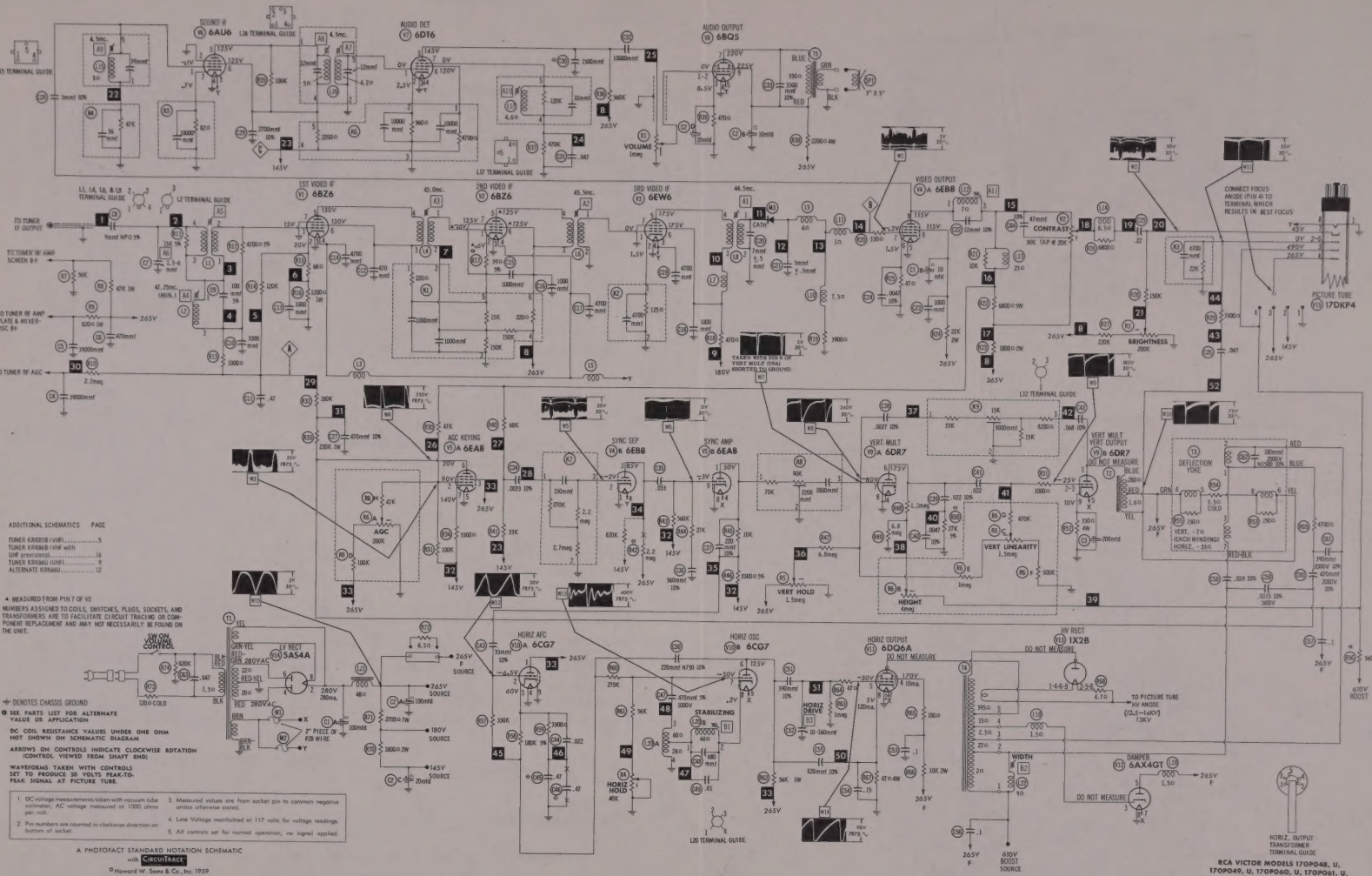
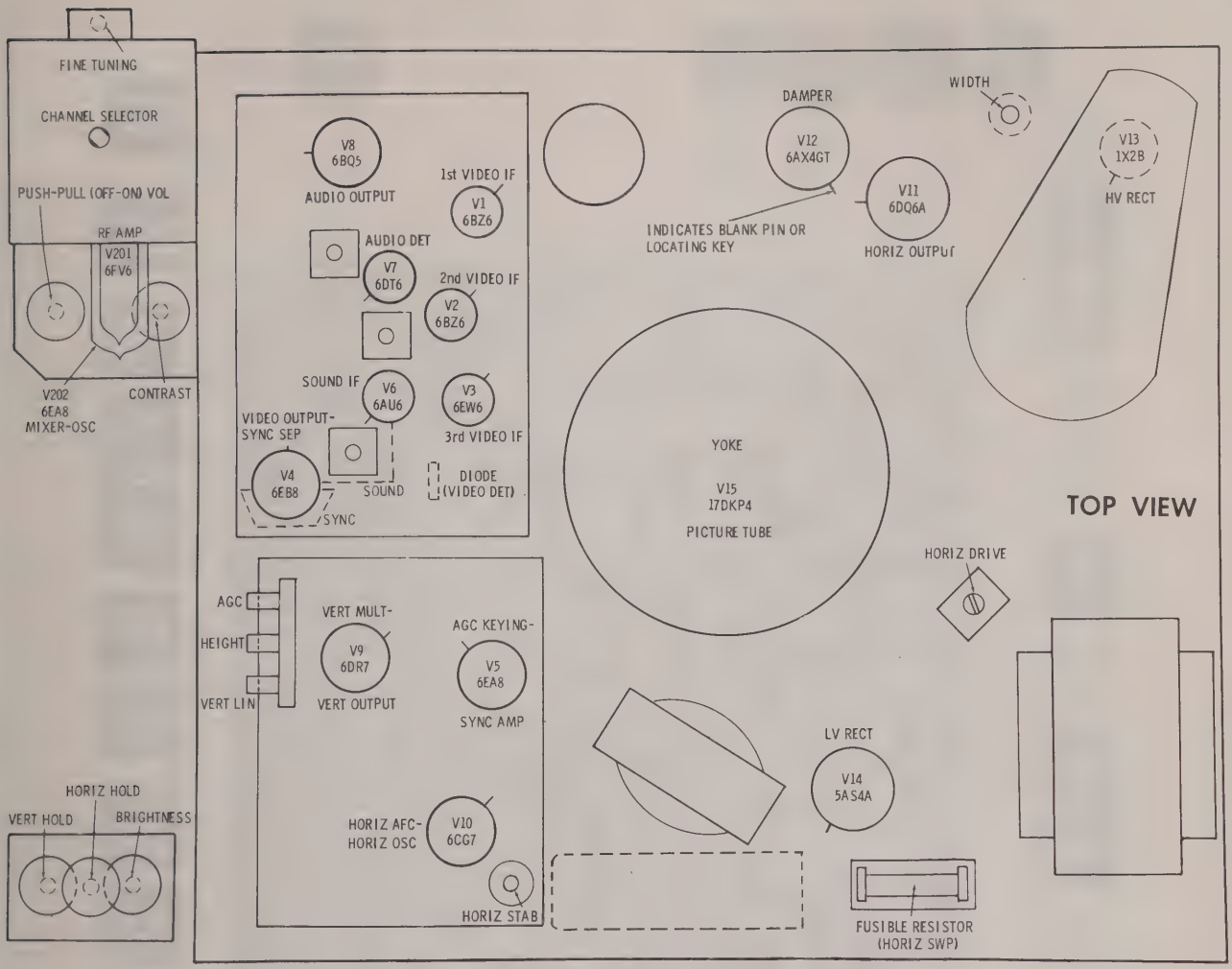
JA461

SET 457 FOLDER 1


SOUND IF V6 6AU6
AUDIO DET V7 6DT6
AUDIO OUTPUT V8 6BQ5
VOLUME 1meg
1ST VIDEO IF V3 6BZ6
2ND VIDEO IF V4 6BZ6
3RD VIDEO IF V5 6EW6
VIDEO OUTPUT V9 A 6EB8
CONTRAST 30K TAP @ 20K
BRIGHTNESS 200K
PICTURE TUBE V13 17DKP4
CONNECT FOCUS ANODE (PIN 4) TO TERMINAL WHICH RESULTS IN BEST FOCUS
TO TUNER IF OUTPUT
TO TUNER RF AMP PLATE & MIXER-OSC B+
TO TUNER RF AGC
AGC KEYING V5 A 6EA8
AGC 300K
SYNC SEP V4 B 6EB8
SYNC AMP V5 B 6EA8
VERT MULT V9 A 6DR7
VERT MULT VERT OUTPUT V9 B 6DR7
DO NOT MEASURE
VERT LINEARITY 1.5meg
HEIGHT 4meg
VERT HOLD 1.5meg
DEFLECTION YOKE
VERT. - TO (EACH WINDING) HORIZ. - 330
HORIZ AFC V10 A 6CG7
HORIZ OSC V10 B 6CG7
STABILIZING
HORIZ HOLD 40K
HORIZ OUTPUT V11 6DQ6A
DO NOT MEASURE
HORIZ DRIVE
HV RECT V13 1X2B
DO NOT MEASURE
TO PICTURE TUBE HV ANODE (12.5-14KV) 1MA
WIDTH
DAMPER V12 6AX4GT
DO NOT MEASURE
LV RECT V14 5AS4A
ON VOLUME CONTROL
280V AC
120Ω COLD
610V BOOST
180V SOURCE
145V SOURCE
265V SOURCE
L35 TERMINAL GUIDE
L36 TERMINAL GUIDE
L37 TERMINAL GUIDE
L12 TERMINAL GUIDE
L20 TERMINAL GUIDE
HORIZ. OUTPUT TRANSFORMER TERMINAL GUIDE
TAKEOFF LUG FOR VERT MULT (V9A) MOUNTED TO GROUND
CATH
ADDITIONAL SCHEMATICS PAGE
TUNER KRK85B (VHF)....5
TUNER KRK86B (VHF with UHF provisions)....16
TUNER KRK86U (UHF)....9
ALTERNATE KRK86U....12
▲ MEASURED FROM PIN 7 OF V2
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
DENOTES CHASSIS GROUND
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter; AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation, no signal applied.
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
©Howard W. Sams & Co., Inc. 1959
RCA VICTOR MODELS 170P048, U, 170P049, U, 170P060, U, 170P061, U, 170P063, U, 170P064, U (Ch. KCS126A, B)

TUBE PLACEMENT CHART



RCA VICTOR MODELS 17OP048, U,
17OP049, U, 17OP060, U, 17OP061, U,
17OP063, U, 17OP064, U (Ch. KCS126A, B)

TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound V14, Fuse Wires (Fil.)

SWEEP FAILURE
No raster, has sound Fusible Resistor (Horiz. Swp), V10, V11, V12, V13, V15,
No vertical deflection V9 V14
Poor vert. linearity or foldover V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V4, V10, V11, V12
Vert. off freq. V9
Horiz. off freq. V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det) V4, V15
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V6, V7, V8
Overloaded picture V5

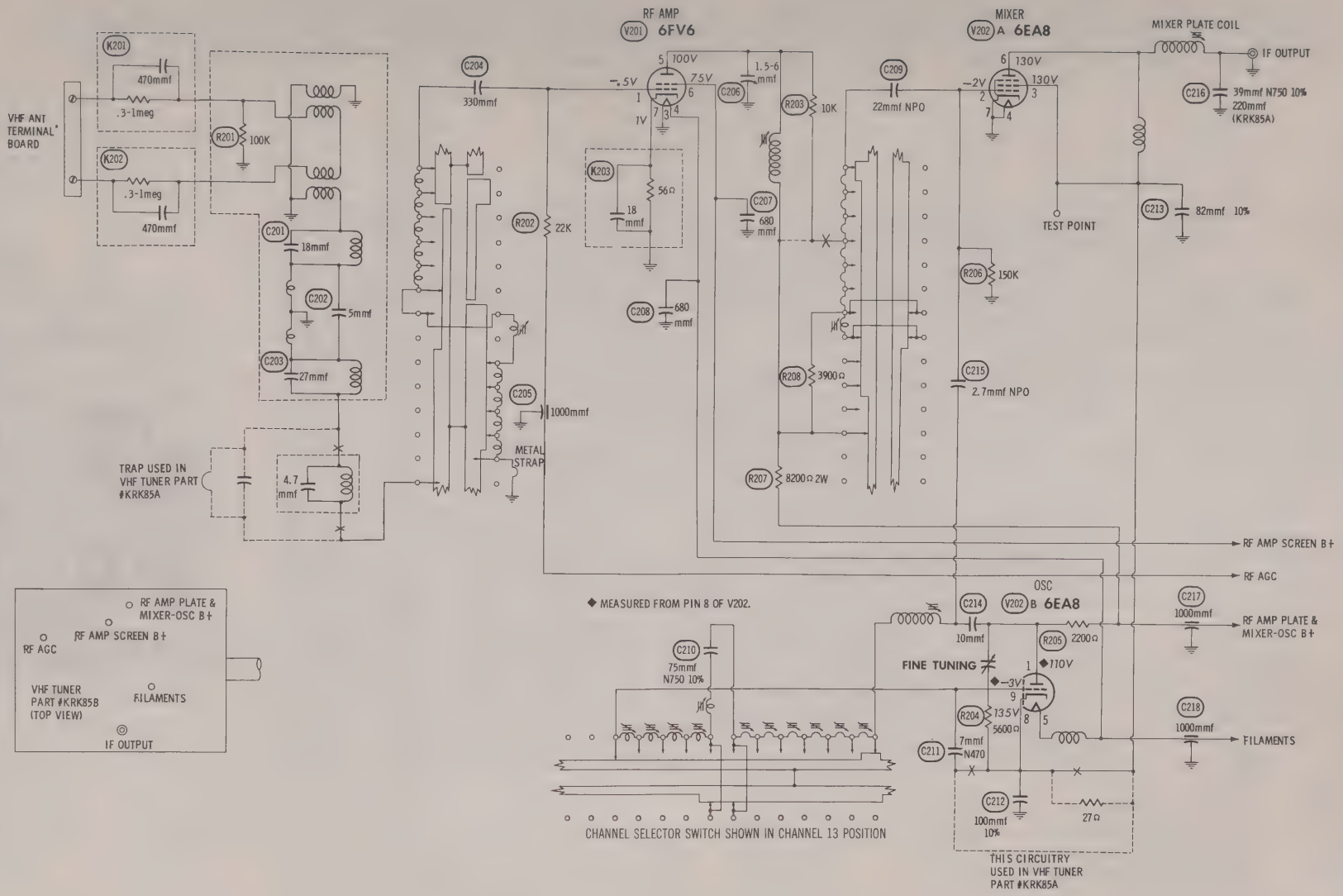
SYNC FAILURE
No vert. sync V9
No horiz. sync V10
No vert. or horiz. sync V4, V5

CircuiTrace Numbers 1 thru 28

A Howard W. Sams CIRCUITRACE Photo

MAIN
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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VHF TUNER KRK85A, B

RCA VICTOR MODELS 17OP048, U, 17OP049, U, 17OP060, U, 17OP061, U, 17OP063, U, 17OP064, U (Ch. KCS126A, B)

TUNER KRK85B

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6FV6	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6EA8	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	18				DI -18	DD-180	L10Q18	CNO-418	5GA-Q18	
C202	5				NPO-DI 5	DD-050	L10V5	ZT-555	5GA-V5	
C203	27				DI-27	DD-270	L10Q27	CNO-427	5GA-Q27	
C204	330				BPD-00033	DD-331	L10T33	B-333	5GA-T33	
C205	1000				EF-001	MFT-1000			503C-D1	
C206	1.5-6					829-6		CT-552		
C207	680				BPD-00068	DD-681	L10T68	B-368	5GA-T68	
C208	680				BPD-00068	DD-681	L10T68	B-368	5GA-T68	
C209	22		NPO		NPO-DI 22	DTZ-22	C10Q22C	CNO-422	5TCC-Q22	
C210	75		N750 10%		N750-DI 75	DTN-75	C10Q75U		5TCU-Q75S 10%*	
C211	7		N470							
C212	100		10%		ADM-15-101 10% *	DD-101	22A5T1	CNO-310	MS-31	
C213	82		10%		ADM-15-820 10% *	DD-820	22A5Q82	CNO-482	MS-482	
C214	10				SI 10	DD-100	L10Q1	UC-541	5GA-Q1	
C215	2.7		NPO						5TCCB-V27S	
C216	39		N750 10%			TCN-39	C10Q39U	CN7-439	5TCU-Q39S 10% *	
C217	1000				EF-001	MFT-1000			503C-D1	
C218	1000				EF-001	MFT-1000			503C-D1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R201	100K			
R202	22K			
R203	10K			
R204	5600Ω			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R205	2200Ω			
R206	150K			
R207	8200Ω	2		
R208	3900Ω			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	RCA Victor PART No.	REPLACEMENT DATA	
K201	Antenna Isolation	470mmf, .3-1meg	104328	Centralab Sprague	RC-471 AC1-1
K202	Antenna Isolation	470mmf, .3-1meg	140328	Centralab Sprague	RC-471 AC1-1
K203	RF Cath. Bypass	18mmf, 56Ω			

PRE-ALIGNMENT INSTRUCTIONS

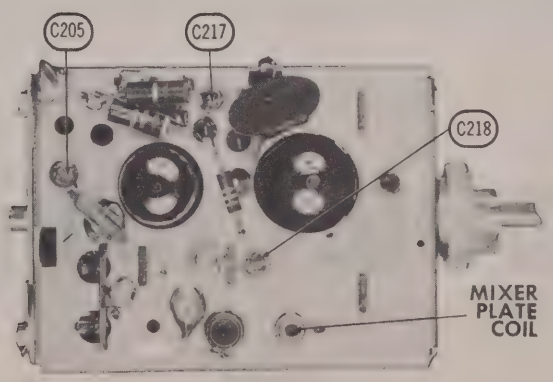
Suggested Alignment Tools: GENERAL CEMENT #8607, 9291
WALSCO #2520, 2522, 2523, 2524, 2537

OSCILLATOR ALIGNMENT

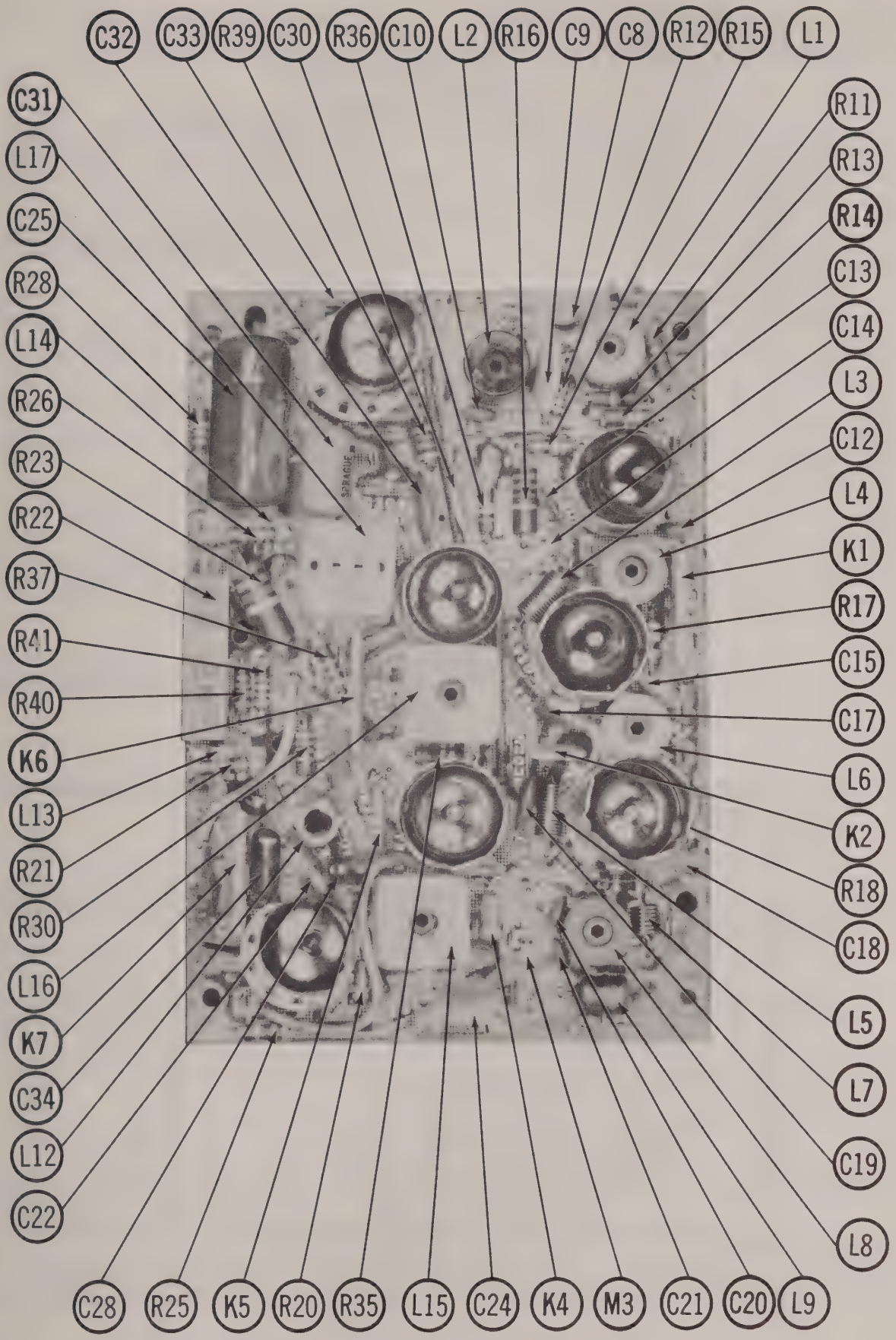
Set the Fine Tuning to the center of its range. Channel 13 slug is located on top of the tuner in front of the Oscillator tube. Channel 12 thru 2 adjustments are located on the front of the tuner in a circle around the shaft. The adjustments should be made in sequence from the highest to the lowest in the area. Channel 12 adjustment is located near top of tuner. Proceed in a counterclockwise direction adjusting for best picture and sound.

RF AND MIXER ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.



TOP VIEW



MAIN PRINTED BOARD

SET 457 FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Allow a 20 minute warm-up period for the receiver and test equipment.
Disable the Horizontal Output circuit by connecting a 150Ω 10W resistor in series with the plate lead of the 6DQ6A (V12). Connect the negative lead of a 12.5 volts bias supply to pin 5 of V12. Connect positive to chassis.
Suggested Alignment Tools:
A1 thru A5, A7, A8, A9 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
A10, A11 ..... GENERAL CEMENT #8721, 8722
WALSCO #2519

VIDEO IF ALIGNMENT

Connect the negative lead of a 4 volt bias supply to point Ⓐ. Positive to chassis.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	1500mmf Ceramic Capacitor	High side to Mixer Grid wafer contact thru access hole (adjacent to Mixer Grid wafer) located in left side of tuner shield. Low side to chassis.	44.5MC (Unmod)	Any non-interfering channel	DC probe to point Ⓑ. Common to chassis. (Across Video Det. load)	A1	Adjust for maximum deflection. Adjust generator output for 3 volts on meter when finally peaked.
2.	"	"	45.5MC	"	"	A2	"
3.	"	"	43.0MC	"	"	A3	"
4.	"	"	47.25MC	"	"	A4	Adjust for MINIMUM deflection.

OVERALL VIDEO IF RESPONSE CHECK

Connect bias as under "Video IF Alignment".
Connect a 180Ω resistor from pin 5 (plate) to pin 6 (screen) of the 1st Video IF Amplifier (V1).
Couple signal generator loosely to sweep output cable to provide markers.

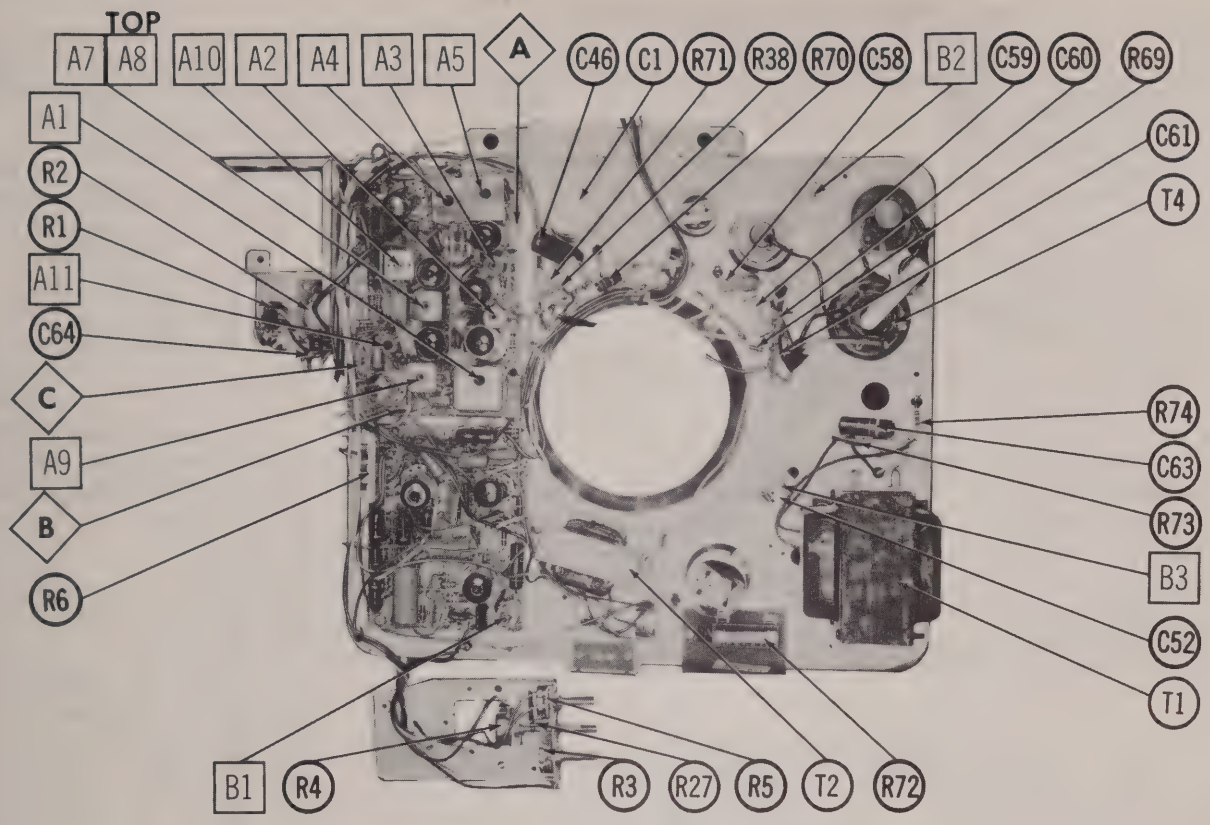
	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
5.	1500mmf Ceramic Capacitor	High side to Mixer Grid wafer contact thru access hole (adjacent to Mixer Grid wafer) located in left side of tuner shield. Low side to chassis.	45MC (10MC Swp)	42.5MC 45.75MC	4	Vert. Amp. thru demodulator probe to pin 5 (plate) of 1st Video IF Amp. (V1). Low side to chassis. Calibrate scope for 0.5 volts peak to peak.	A5, A6, & Mixer Plate Coil	Adjust Mixer Plate Coil and A5 for maximum gain, using A6 to obtain curve shape with markers as shown in Fig. 1. Remove 180Ω resistor from V1.
6.	"	"	"	42.5MC 45.0MC 45.75MC	"	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis. (Across Video Det. load). Calibrate scope for 5 volts peak to peak.	A1, A2, A3	Check for response similar to Fig. 2. If necessary, retouch A1, A2 and A3 for desired response.
7.	Fig. 3	High side thru pad (Fig. 3) to Mixer Grid wafer contact thru access hole (adjacent to Mixer Grid wafer) located in left side of tuner shield. Low side to chassis.	Not used	45.75MC	"	USE VTVM DC probe to point Ⓑ. Common to chassis.		Adjust generator output to provide exactly 1.5 volts on VTVM.
8.	1500mmf Ceramic Capacitor	Remove pad. High side to Mixer Grid wafer contact thru access hole (adjacent to Mixer Grid wafer) located in left side of tuner shield. Low side to chassis.	45MC (10MC Swp)	41.25MC		USE VTVM. DC probe to point Ⓑ. Common to chassis. Connect scope as in step 6.	A1, A3	Retouch for 1.0 to 1.5 volts on VTVM while maintaining response similar to Fig. 2.
9.	Fig. 6	Across antenna terminals thru matching network (Fig. 4).	Each VHF Channel in turn	42.5MC 45.75MC 47.25MC	All VHF Channels	Vert. Amp. thru 10K to point Ⓑ. Low side to chassis.	A1, A2	Check for response similar to Fig. 2. Retouch A1 and A2 SLIGHTLY to correct for tilt or other condition that is approximately the same on all channels.

SOUND IF ALIGNMENT

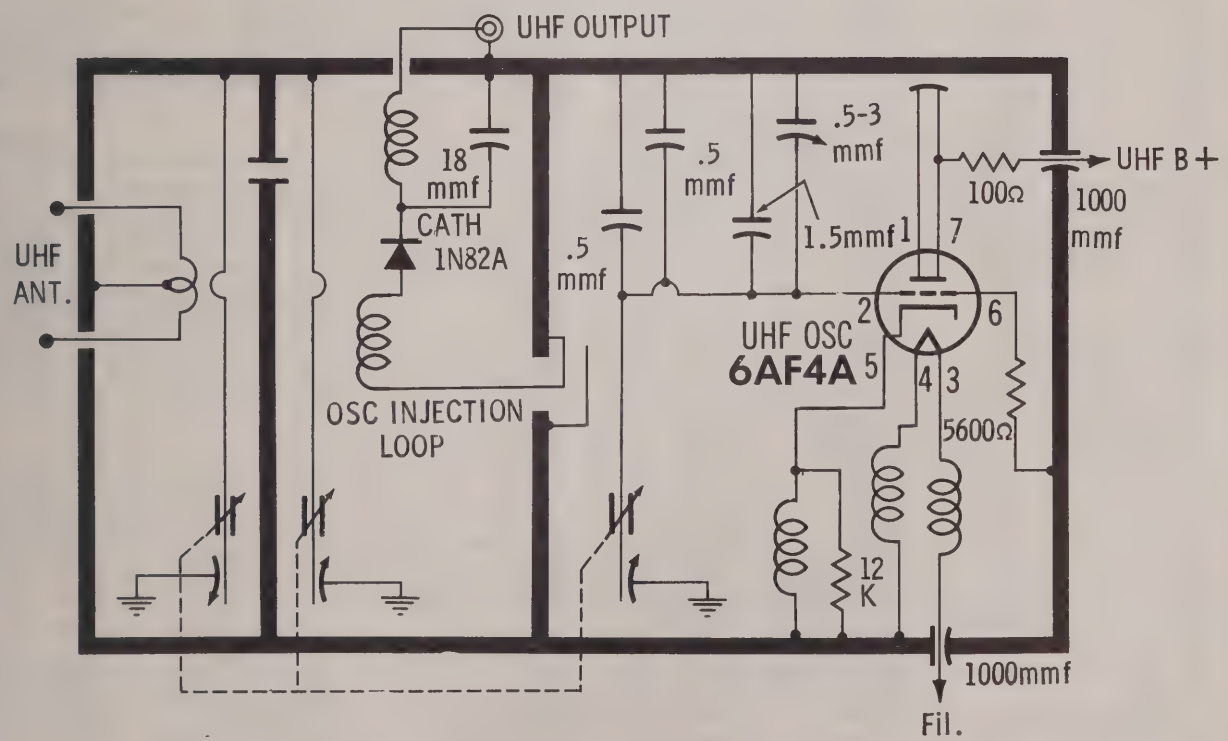
Connect the negative lead of a 10 volt bias supply to point Ⓐ. Positive to chassis.
Set Contrast fully clockwise.
Set VTVM for negative voltage readings.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001mfd	High side to point Ⓑ. Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 7 (grid 3) of 6DT6 (V7). Common to chassis.	A7, A8, A9	Adjust for maximum negative DC on meter. Attenuate generator for a reading between 1.0 and 1.5 volts on meter when finally peaked. Peak A7 and A8 with maximum core separation. Adjust A9 for maximum deflection.
11.	Remove VTVM and diode probe. Connect scope across Volume control. Turn off signal generator and tune in the strongest signal in the area adjusting Volume control for normal volume. Preset coil slug (A10) flush with top of coil form. While observing scope and listening to sound output adjust A10 clockwise to a peak. Continue turning clockwise to a second louder peak and adjust for maximum on this second peak.						

CONTINUED PAGE 13



CHASSIS TOP VIEW



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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UHF TUNER KRK66U

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video IF Amp	6BZ6	
V2	2nd Video IF Amp	6BZ6	
V3	3rd Video IF Amp	6EW6	
V4	Video Output-Sync Sep.	6EB8	
V5	AGC Keying-Sync Amp.	6EA8	
V6	Sound IF Amp.	6AU6	
V7	Audio Det.	6DT6	
V8	Audio Output	6DQ6	
V9	Vert Mult.-Vert. Output	6LR7	
V10	Horiz. AFC-Horiz. Osc.	6CQ7	
V11	Horiz. Output	6DQ6A	
V12	Damper	6AX4GT	
V13	HV Rect.	1X2B	
V14	LV Rect.	6A8A	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	RCA Victor PART No.	GENERAL ELECTRIC PART No.	RCA PART No	SYLVANIA PART No	
V15	17DEP4		17DEP4 ①	17DEP4 ②	① Aluminized ② Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	RCA Victor PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	FYRAMID PART No.	SPRAGUE PART No.		
C1A	±100	600	107180	AFH3-123-30	C6S84	FP230.6	TMT-186	TVL-3683		
B	±10	350								
C2A	±100	400	102411	AFH4-103-40	D0805	FP421 3	TMQ-196	TVLS-4656 3*		
B	±10	400								
C	±20	350								
D	30	50								
C3	200	25	107398	PRS1530	BR2502	WS342		TVA-1490		

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No	RATING		TOL	REPLACEMENT DATA						NOTES
	CAP	VOLT		RCA Victor PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No	SPRAGUE PART No	
C4	39000			105479		DD-403	CUB6S6	GEM-6154	5HK-S40	
C5	39000			105479		DD-403	CUB6S6	GEM-6154	5HK-S40	
C6	470			77393	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C7	1.5-8			107177		529-5				
C8	8		NPO 5%		NPO-DI 10		C10V8C		10TCC-Q80	
C9	100		5%	105300	DI-100	DTZ-100	C10T1C	CNO-310	10TCC-T10	
C10	1000			77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C11	47	200			P388N-47		CUB2P47	GEM-2047	2TM-P47	
C12	470			78622	BPD-00047	DD-471	BYA10T47	B-347	5GA-T47	
C13	1000			77252	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C14	4700			73473	BPD-0047	DD-472	BYA1D47MB	B-247	5HK-D47	
C15	1000			102234A	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C16	1000			102234A	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C17	4700			73473	BPD-0047	DD-472	BYA1D47MB	B-247	5HK-D47	
C18	1000			102234A	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C19	4700			73473	BPD-0047	DD-472	BYA1D47MB	B-247	5HK-D47	
C20	7		±.5mmf	104177	NPO-DI 6.8	DTZ-6R8	C10V7C	CNO-568	10TCC-V68	
C21	5		±.5mmf	104178	NPO-DI 5	DTZ-4R8	C10V5C	CNO-547	10TCC-V50	
C22	12		10%	103945		TCZ-12	C10Q12C	CNO-612	10TS-Q12	
C23	1000			102234A	BPD-001	DD-102	BYA10D1M	B-210	5HK-D10	
C24	.0047	600	10%		V84C6D4710		PM6D47	GTM-6247	6TM-D47	
C25	23	600			P588N-23		CUB9F23	GEM-6023	6TM-F23	
C26	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C27	470		10%	102230	DI-470	DD-471		JL-347	10TS-T47	
C28	5		10%	104304	NPO-DI 3	TCZ-3R3	C10V3C	CNO-533	10TS-V33	
C29	2700		10%	104121	DI-2700		PM2D3	GTM-613	6TS-D27	
C30	1500				BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	①
C31	.047	200			P388N-047	DF-503	CUB2S47	GEM-4147	2TM-S47	
C32	10000			73960	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	3300		10%	104308	DI-3300		PM5D33	GTM-5233	10TS-D33	
C34	.0033	600	10%		V84C5D33 10		PM5D33	GTM-5233	6TM-D33	
C35	.033	400			P488N-033	DF-303	CUB4S33	GEM-4133	4TM-S33	
C36	560		10%		DI-560	DD-561		JL-356	10TS-T56	
C37	220		10%	104144	1468-00022K	DS-221	2ZRST22	JL-322	MS-322	
C38	.0027	600	10%				PM6D3		6TM-D27	
C39	.022	600	10%		V84C-S522 10		PM6S22	GTM-6122	6TM-S22	
C40	.0047	600	10%		V84C-5D47 10		PM6D47	GTM-6247	6TM-D47	
C41	.022	600			P688N-022		CUB6S22	GEM-6122	6TM-S22	
C42	.068	600	10%		V84C6S68 10		PM6S68	GTM-6168	6TM-S68	
C43	33		10%	105348	DI-33	DTZ-33	1J0G33	CNO-433	10TS-Q33	
C44	.022	200			P288N-022		CUB4S22	GEM-4122	4TM-S22	
C45	.47	300			P288N-47		CUB2P47	GEM-2047	2TM-P47	②
C46	.47	300			P288N-47		CUB2P47	GEM-2047	2TM-P47	②
C47	470	1000		108672	1469-00047J		2ZRST47		5GA-T47B 5% *	
C48	680		5%	108518	BPD-00068	DD-681		B-368	5GA-T68	
C49	.01	600			P468N-01	DS-103	CUB4S	GEM-411	4TM-S1	
C50	220		N750 10%	105245	N750-DI 220	DTN-220	C10T22U	CN7-422	10TCU-T22	
C51	390		10%	106575	DI-390	DD-391			10TS-T39	
C52	10-180			103413						
C53	.1	200			P288N-1	DF-104	CUB2P1	GEM-601	2TM-P1	
C54	.15	200			P288N-15		CUB2P15	GEM-2015	2TM-P15	
C55	820		10%	106080	1468-00068K	DD-821	1R5T82	JL-382	MS-382	
C56	.1	600			P688N-1		CUB6P1	GEM-601	6TM-P1	
C57	.1	400			P488N-1	DF-104	CUB4P1	GEM-601	4TM-P1	
C58	.039	400	10%		P84CM039		PM6S4	GTM-414	5HF-S39	
C59	.0018	1600	10%						MDI-D18 10%	
C60	470	3000	10%	104363					30GA-T478 10% *	
C61	180	3000	10%	140691					30GA-T396 10% *	
C62	100	2000	N1500 10%	105418						
C63	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

1 Some versions may use 1000mmf in this application (Part #102234A).
2 Some versions may use a single .33mfd @ 300V to replace C45 and C46.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	RCA Victor PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2	107313					Volume
B	Switch							Push-Pull Off-On
R2	30K	1/2	107316					Contrast, Tap @ 30K
R3A	200K	1/2	107314	AB-46	A47-200K-B	Q11-136	U43	Brightness
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R4	40K	1/2	107315					Horiz. Hold
R5A	1.5meg	1/2	107313	AB-742	A47-1.5meg-B	Q11-138	U135	Vert. Hold
B	Shaft			AK-8	RS-3/16	NQ	D8-37	
R6A	200K	1/4	107380					AGC
B	4meg	1/4						Height
C	1.5meg	1/4						Vert. Lin.
D	100K	1/4						AGC B+ Coupling
E	1meg	1/4						Vert. Lin. Coupling
F	500K	1/4						Vert. Lin. Limiter
G	470K	1/4						Vert. Output Grid Coupling
H	47K	1/4						AGC Grid Coupling

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R7	56K			
R8	47K	1		
R9	820Ω	1		
R10	2.2meg			
R11	15K 5%			
R12	47000 5%			
R13	1000Ω			
R14	120K			
R15	68Ω			
R16	12000Ω	1		
R17	390 5%			Note 4
R18	470Ω			
R19	3900Ω			
R20	330Ω			
R21	10K			
R22	6800Ω	5	107026	
R23	1800Ω	2		
R24	22K	2		
R25	47Ω			
R26	6800Ω			
R27	220K			
R28	150K			
R29	3300Ω			
R30	47K			
R31	100K			
R32	180K			
R33	220K	1		
R34	100K			
R35	560K			
R36	470K			
R37	2200Ω	4	103352	
R38	4700Ω			
R39	47Ω			
R40	68K			

ITEM No.	RATING		RCA Victor PART No.	NOTES
	OHMS	WATT		
R41	33K			
R42	3.3meg			Note 1
R43	560K			
R44	27K			
R45	10K			
R46	3300Ω 5%			
R47	6.8meg			
R48	1.2meg			
R49	8.5meg			
R50	27K 5%			Note 2
R51	1000Ω			
R52	330Ω	4	107292	
R53	150Ω			
R54	3.5Ω Cold		107684	
R55	150Ω			
R56	560K			Note 3
R57	330K			
R58	180K 5%			
R59	3300Ω			
R60	270K			
R61	56K			
R62	50K	1		
R63	1meg			
R64	47Ω			
R65	100Ω			
R66	10K	2	107289	
R67	470Ω	4		
R68	4.7Ω	7	104547	
R69	4700Ω			
R70	1800Ω	2		
R71	2700Ω	7	102789A	
R72	8.5Ω		104295	
R73	1200 Cold		107181	
R74	820K			

Note 1 Not used in some versions
Note 2 Some versions may use 22K 5% in this application.
Note 3 Some versions may use 820K in this application
Note 4 Some versions may use 33Ω in this application.

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	RCA Victor PART No	REPLACEMENT DATA
K1	Video IF Decoupling	1000mmf, 1000mmf, 15K, 150K, 150K, 220Ω, 220Ω	107277	
K2	Video IF Cathode Bypass	4700mmf,125Ω	107279	
K3	Vert. Blanking	4700mmf, 22K	107283	
K4	Sound IF Grid	56mmf, 47K	104329	Sprague PRC-1
K5	Sound IF Cathode	10000mmf, 82Ω	107278	Sprague PRC-18
K6	Sound IF Decoupling	10000mmf, 10000mmf, 2200Ω, 4700Ω, 560Ω	107276	Sprague ST-12
K7	Sync Sep. Grid Coupling	180mmf, 270K, 2 2meg, 2 1meg	107200	
K8	Vert. Integrator	1000mmf, 2200mmf, 70K, 90K	107281	
K9	Vert. Feedback	3000mmf, 8200Ω, 15K, 15K, 33K	107282	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		RCA Victor PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	1st Video IF	107202						
L2	2nd Video IF	107203						
L3	Fil. Choke							
L4	2nd Video IF	104233						
L5	Fil. Choke	107204						
L6	3rd Video IF							
L7	RF Choke	104233						
L8	4th Video IF	104233						
L9	Series Peaking Coil	101819	19-3036	19-3036	TV-180	6176	VP-1	36uh
L10	Shunt Peaking Coil	105068	19-3350	19-3350	TV-185	6181	VP-5	250uh
L11	RF Choke	107483			SW-830			2.7uh
L12	4.5MC Trap	104903						
L13	Series Peaking Coil	105518	19-3500	19-3500	TV-204	6174	VP-8	510uh
L14	Series Peaking Coil	104230	19-3300	19-3300	TV-199	6185		300uh
L15	1st Sound IF	104136						①
L16	2nd Sound IF	107301						②
L17	Quadrature Coil	105795						③
L18	RF Choke	76510	19-1009	19-1009		4611		6.2uh
L19	RF Choke	76510	19-1009	19-1009		4611		6.2uh

① Includes 39mmf cap. ② Includes two 12mmf caps. ③ Includes 10mmf cap. and 120K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thordarson PART No.	
L20A	84Ω		107284						Horiz. Osc. tapped at 24Ω
B	44Ω								Horiz. Stabilizer

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ~	RCA Victor PART No.	Halldorson PART No.	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
L21	280A	48Ω	.9 Hy.	100286	26C44 ①				26C44 ①	C-35X

① Drill new mounting hole.

COILS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA								
		RCA Victor PART No	Halldorson PART No	Merit PART No	Miller PART No	Ram PART No	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No
L22	Width Coil (1 6-12MH)	105522	WC-22	MWC-6	6322	20U15	QRC109	WC-8	WC-22	WLC-12 ①

① Do not use tap.

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI	SEC. 1	SEC. 2	RCA Victor PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thordarson PART No	Triad PART No
T1	117V @ 1.8A	560VCT @ 280A	6V @ 3A	107233						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 8.3A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA								
		RCA Victor PART No.	Halldorson PART No	Merit PART No.	Ram PART No.	Rogers PART No	Stancor PART No	Thordarson PART No	Triad PART No.	
T2	Vert. Output	107222								A-115X
T3	Yoke-Horiz.(17MH) (110°)-Vert.(12MH)	106142	Y-48 ①		Y-110 ①		DY-27A	Y-48 ①	T-80 & NW-25	
	Rear Cover & Centering Device	107192							YC-110	
T4	Horiz Output	107183								

① Use original horizontal yoke damping network, if necessary.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	RCA Victor PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T5	7600Ω	3-4Ω	100037	26348	A-3020	AU-604	A-3849	26348	S-9Z	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	RCA Victor PART No.	QUAM PART No	
SP1	3" x 5"	PM	3-4Ω	107282		

FUSES

ITEM No	TYPE	RATING	REPLACEMENT DATA					
			RCA Victor PART No		LITTELFUSE PART No		BUSS PART No	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	2" Length #28 Wire							
M2	2" Length #28 Wire							

CRYSTAL DIODES

ITEM No	ORIG. TYPE	REPLACEMENT DATA				NOTES
		RCA Victor PART No	CBS PART No	RAYTHEON PART No	SYLVANIA PART No	
M3		76675B	1N60	1N60	1N295	Video Det. (Pigtail)

RCA VICTOR MODELS 17OP048, U, 17OP049, U, 17OP040, U, 17OP041, U, 17OP043, U, 17OP044, U (Ch. KCS120A, B)

FOLDER 1

MISCELLANEOUS

ITEM No.	PART NAME	RCA Victor PART No.	NOTES
M4	Tuner	KRK85B	VHF Ch. KCS126A
	Tuner	KRK88B	VHF with UHF provisions Ch. KCS126B
	Tuner	KRK66U	UHF, Ch. KCS126B
	Printed Board	107208	Main (Less Tubes)
	Printed Board	107209	AGC, Sync, Sweep (Less Tubes)

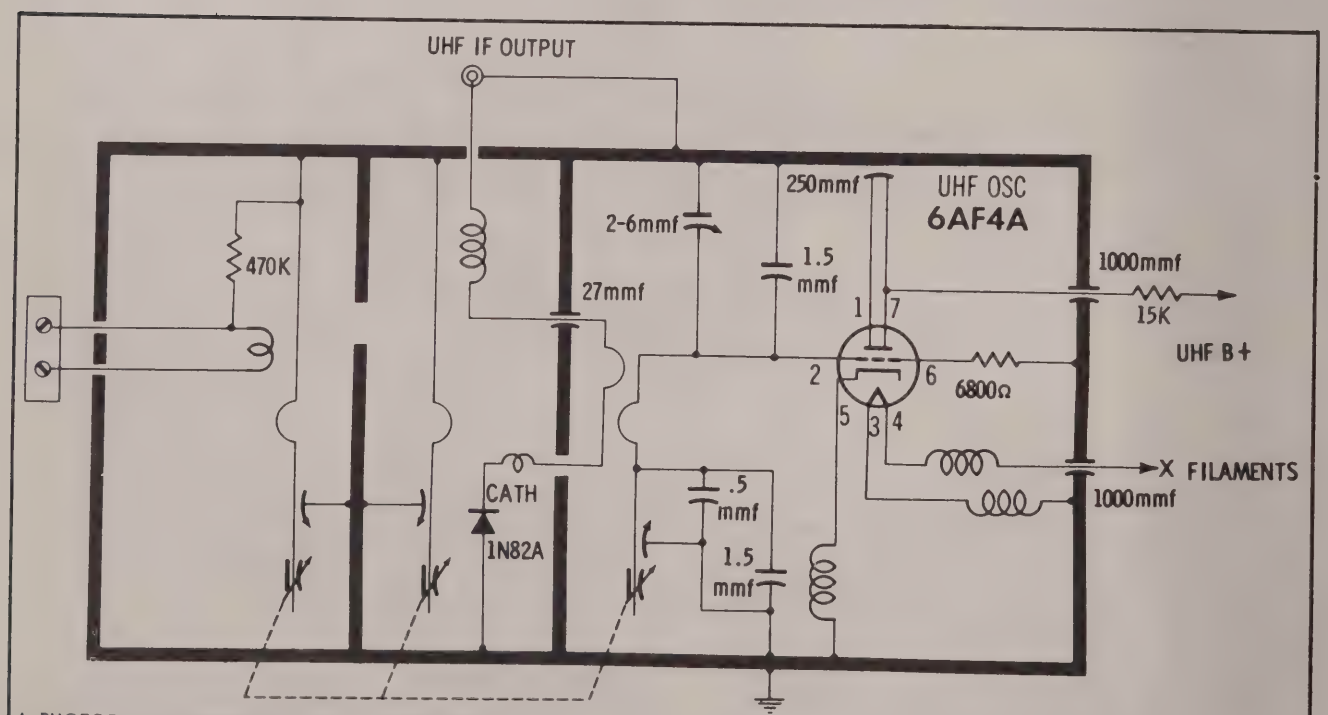
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	107253	
Mask	107246	Model 170P048
Mask	107244	Model 170P060
Mask	107245	Model 170P060U
Mask	107247	Model 170P048U
Mask	107238	Model 170P061
Mask	107239	Model 170P061U
Mask	107242	Model 170P063
Mask	107243	Model 170P063U
Mask	107240	Model 170P064
Mask	107241	Model 170P064U
Mask	107248	Model 170P049
Mask	107249	Model 170P049U
Knob	107270	Channel Selector, Models 170P060, 1, 3, 4, 170P060U, 1U, 3U, 4U
Knob	107269	Channel Selector, Models 170P048, 9, 170P048U, 9U
Knob	107263	Fine Tuning
Knob	107264	Volume, Contrast
Knob	107265	Brightness, Horiz. Hold, Vert. Hold
Dial	107267	Channel Indicator, Models 170P060, 1, 3, 4, 170P060U, 1U, 3U, 4U
Dial	107272	Channel Indicator, Models 170P048, 9, 170P048U, 9U
Dial	107266	UHF Channel Indicator
Cabinet	Z4551	Models 170P064, U
Cabinet	Z4548	Models 170P048, U
Cabinet	Z4553	Models 170P060, U
Cabinet	Z4549	Models 170P049, U
Cabinet	Z4552	Models 170P063, U
Cabinet	Z4550	Models 170P061, U
Handle	107265	Models 170P048, 9, 170P048U, 9U
Handle	107255	Models 170P060, 1, 3, 4, 170P060U, 1U, 3U, 4U
Antenna	107260	Telescoping, VHF
Antenna	107261	Ring, UHF

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



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ALTERNATE CIRCUIT UHF TUNER KRK66U

ALIGNMENT INSTRUCTIONS (cont)

ALTERNATE SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR

Connect the negative lead of a 10 volt bias supply to point (A). Positive to chassis.
Set Contrast fully clockwise.
Set VTVM for negative voltage readings.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
10.	.001mfd	High side to point (B). Low side to chassis.	4.5MC (400∿ FM Mod. 15KC Swp)	Any non-interfering channel	DC probe thru diode probe (Fig. 5) to pin 7 (grid 3) of 6DT6 (V7). Common to chassis.	A7, A8, A9	Adjust for maximum negative DC on meter. Attenuate generator output for a reading between 1.0 and 1.5 volts on meter when finally peaked. Peak A7 and A8 with maximum core separation. Adjust A9 for maximum.
11.	"	"	"	"	USE SCOPE Connect across speaker voice coil	A10	Adjust for maximum 400∿ indication on scope. Adjust Volume control for 0.7 volts peak to peak on scope when peaked.
12.	"	"	"	"	"		Decrease input signal to MINIMUM usable level and retouch A7, A8 and A9 for symmetrical breakout similar to Fig. 6.

4.5MC TRAP ALIGNMENT

Set Contrast fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
13.	.01mfd	High side to point (B). Low side to chassis.	4.5MC (400∿ 30% AM)	Any non-interfering channel	Vert. Amp. thru demodulator probe to pin 7 (cathode) of picture tube. Low side to chassis.	All	Adjust for MINIMUM 400∿ indication on scope.

TUNER ALIGNMENT INSTRUCTIONS LOCATED ON PAGE 6

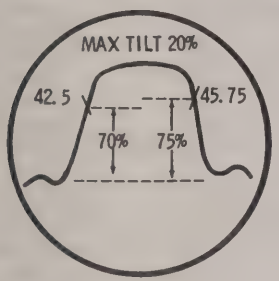


FIG. 1

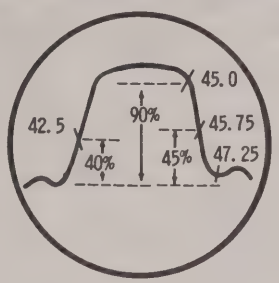


FIG. 2

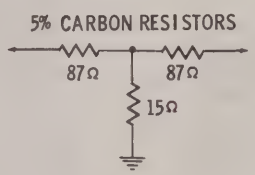


FIG. 3

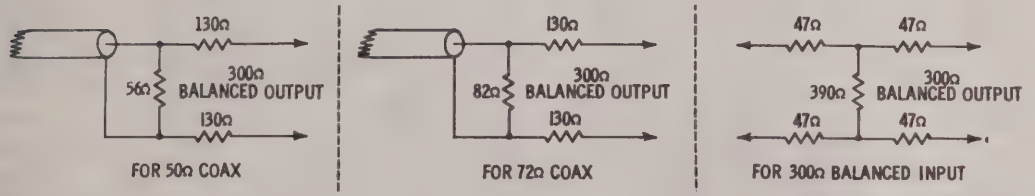


FIG. 4

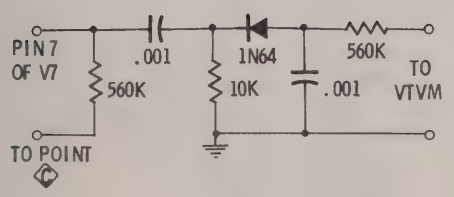


FIG. 5

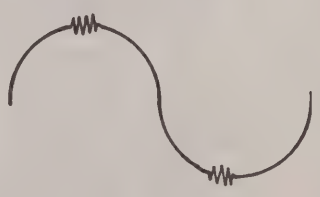
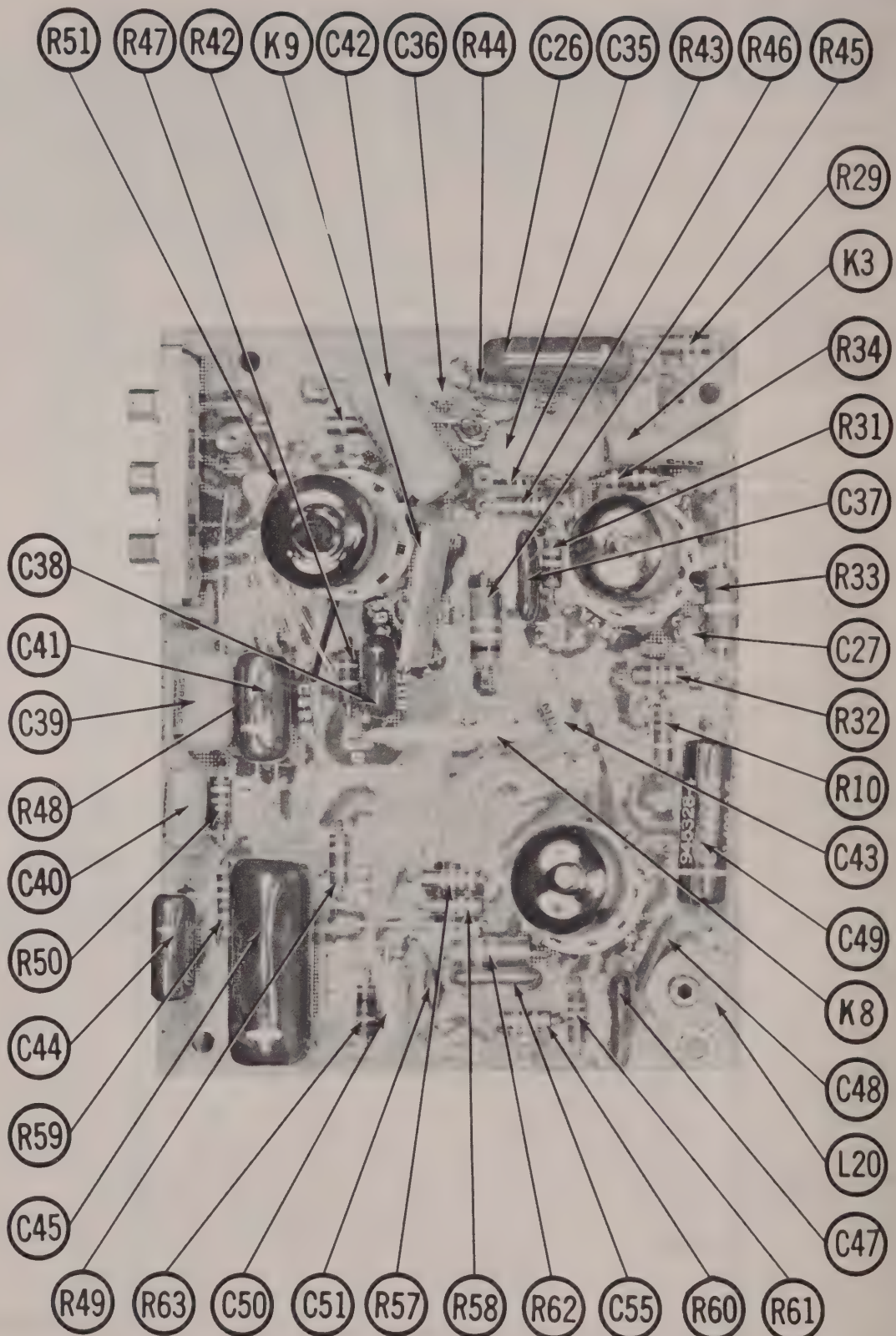
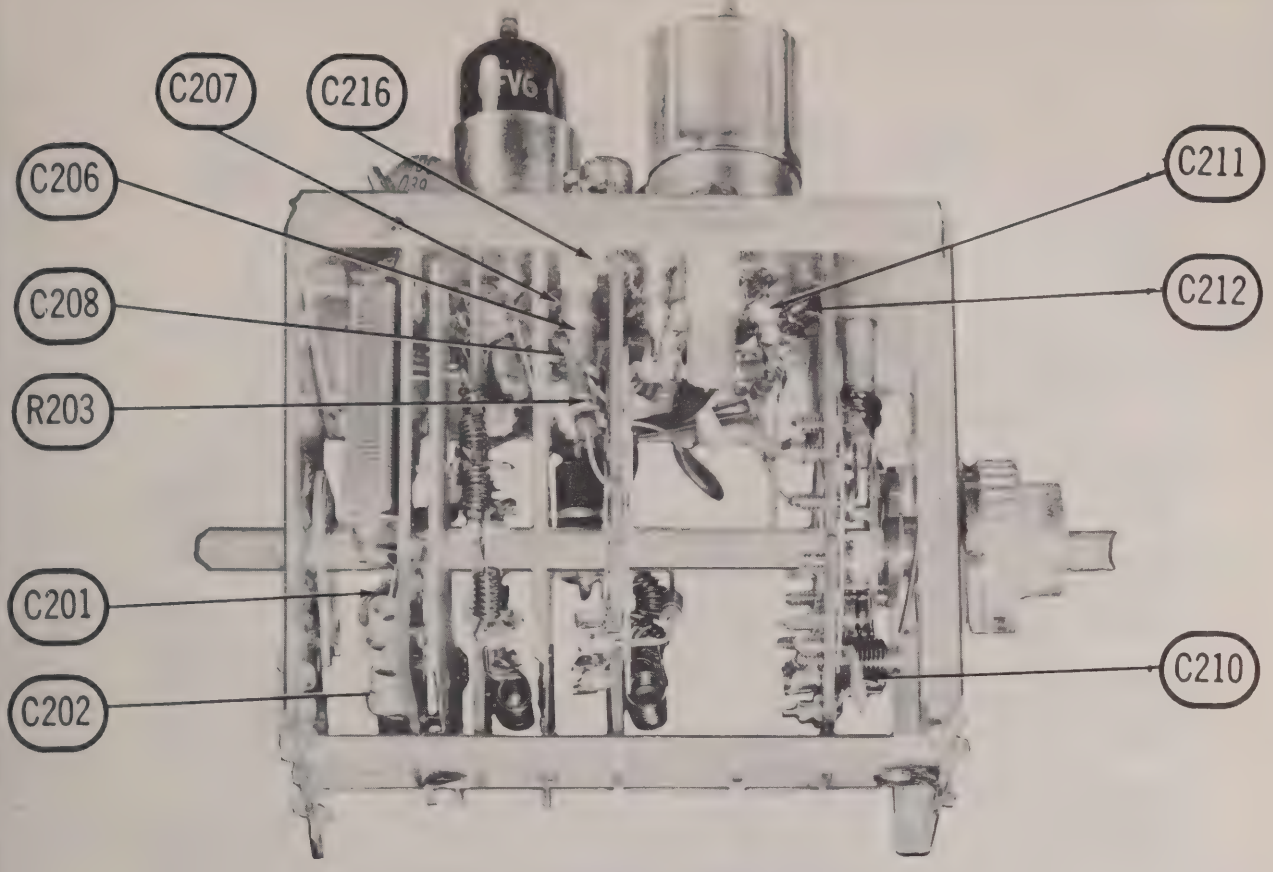


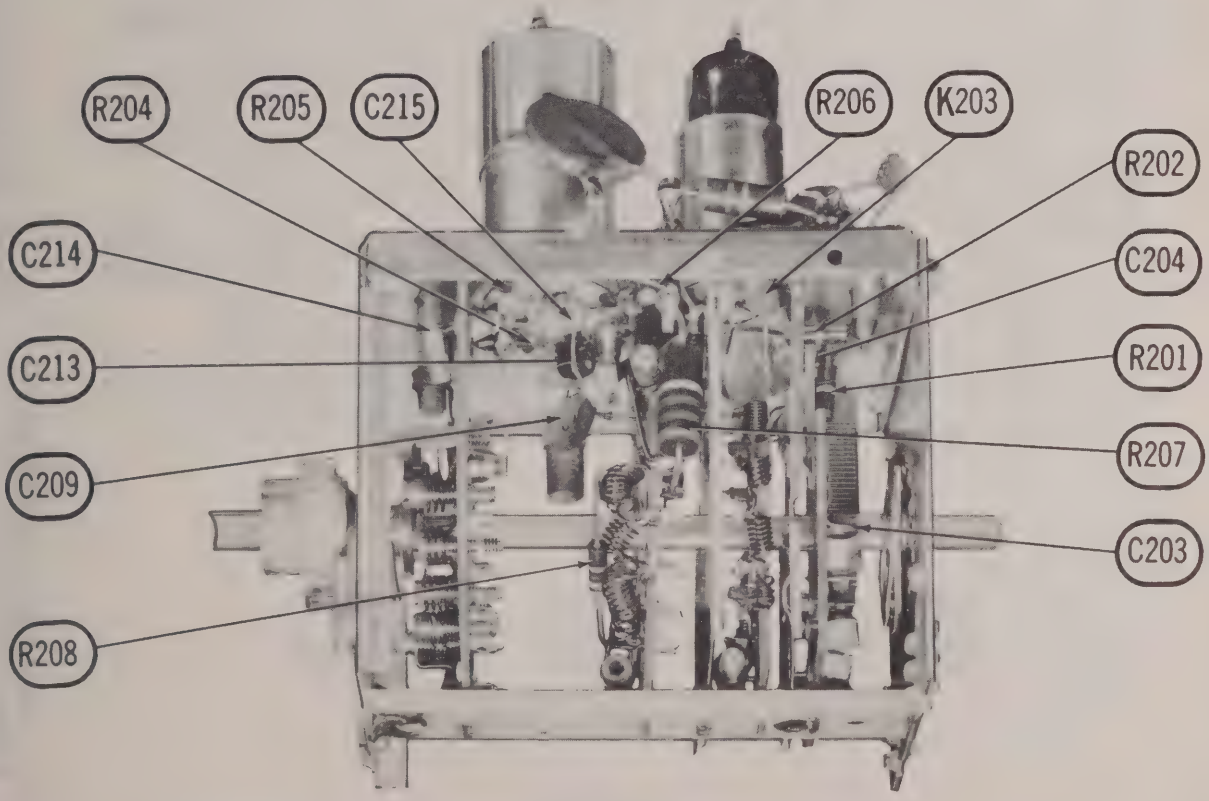
FIG. 6



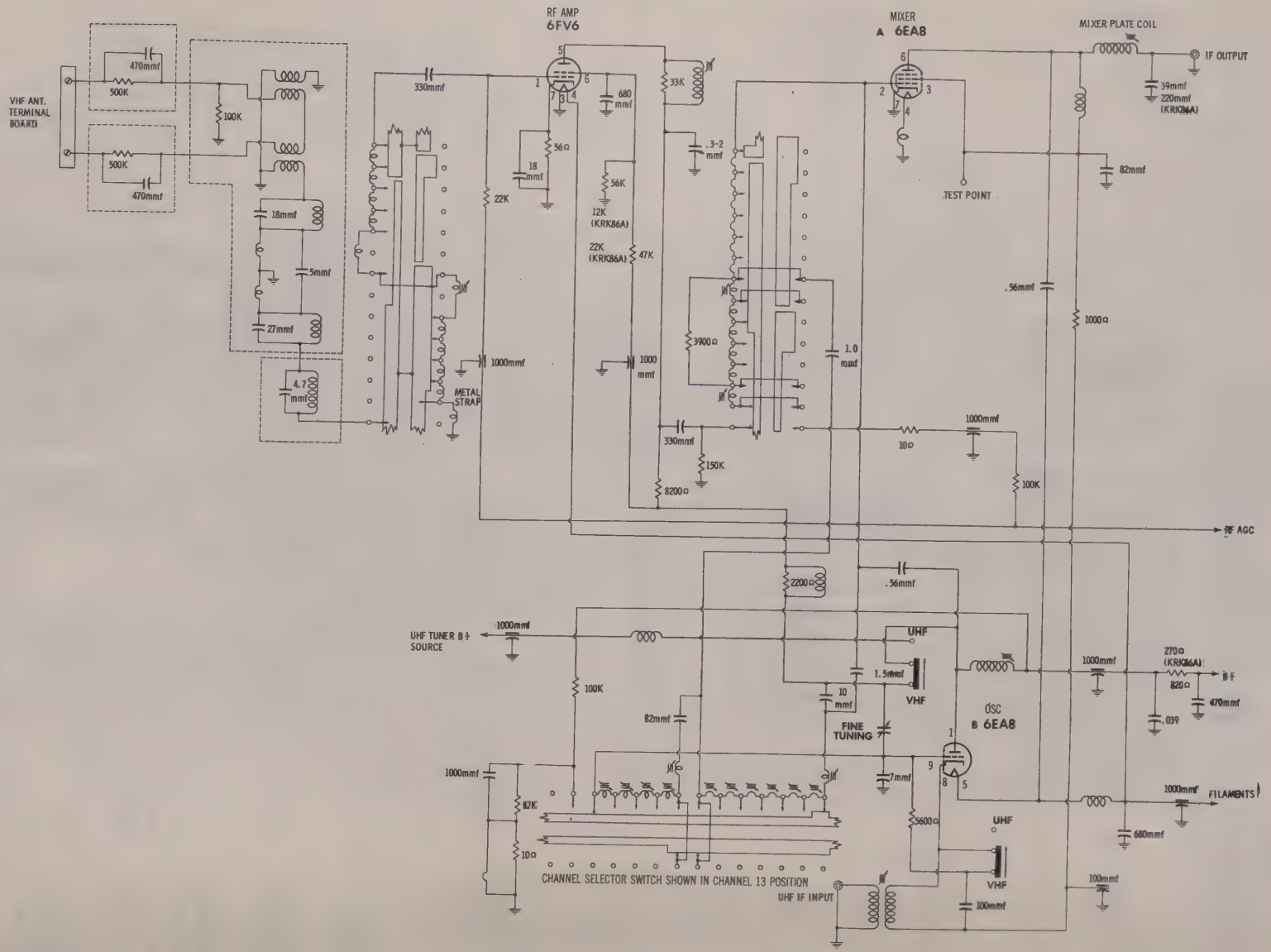
SWEEP PRINTED BOARD



TUNER KRK85B - LEFT SIDE



TUNER KRK85B - RIGHT SIDE



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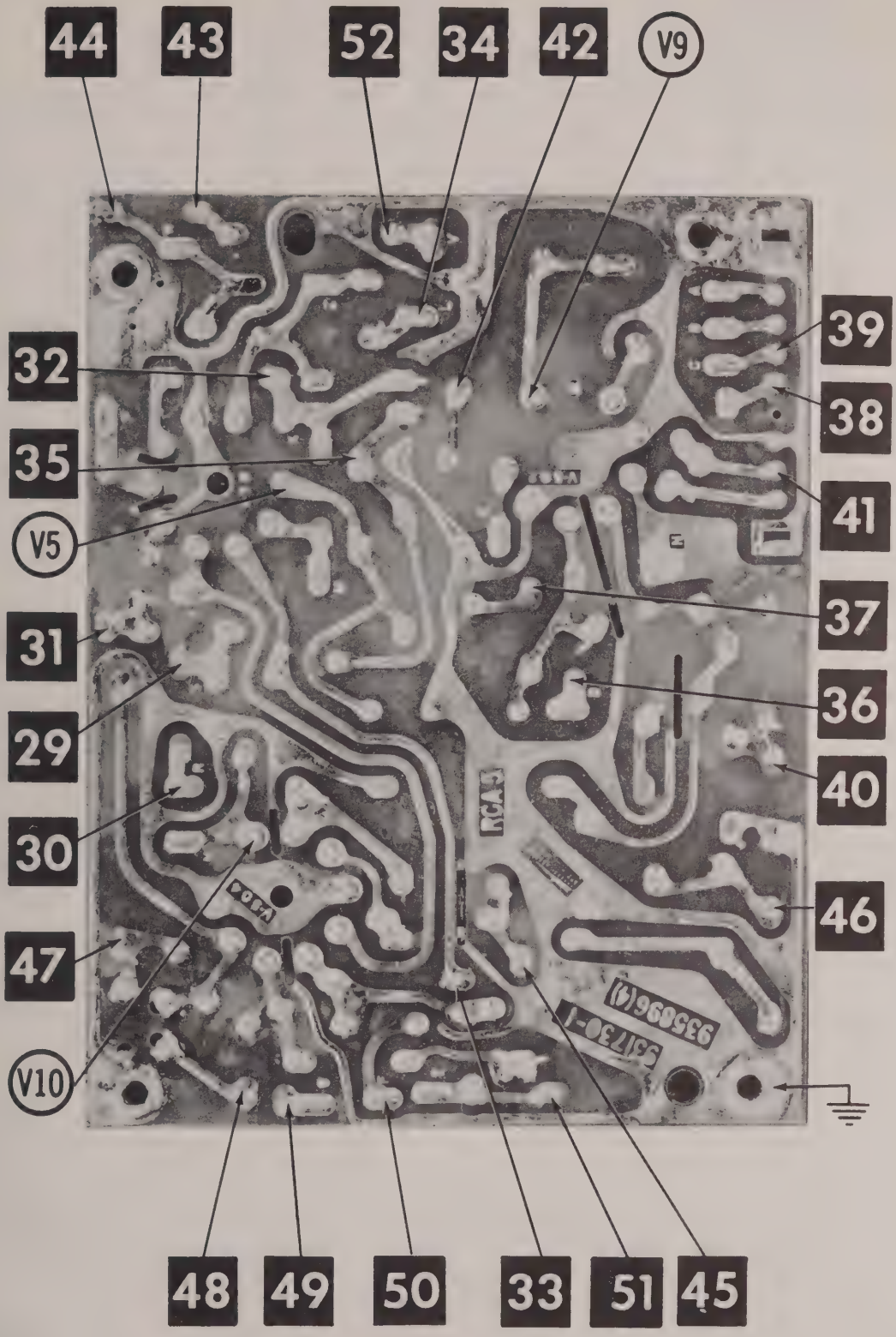
VHF TUNER with UHF provision KRK86A, B



SWEEP
PRINTED BOARD

A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

RCA VICTOR MODELS 17OP048, U, 17OP049, U, 17OP060, U, 17OP061, U, 17OP063, U, 17OP064, U (Ch. KCS126A, B)

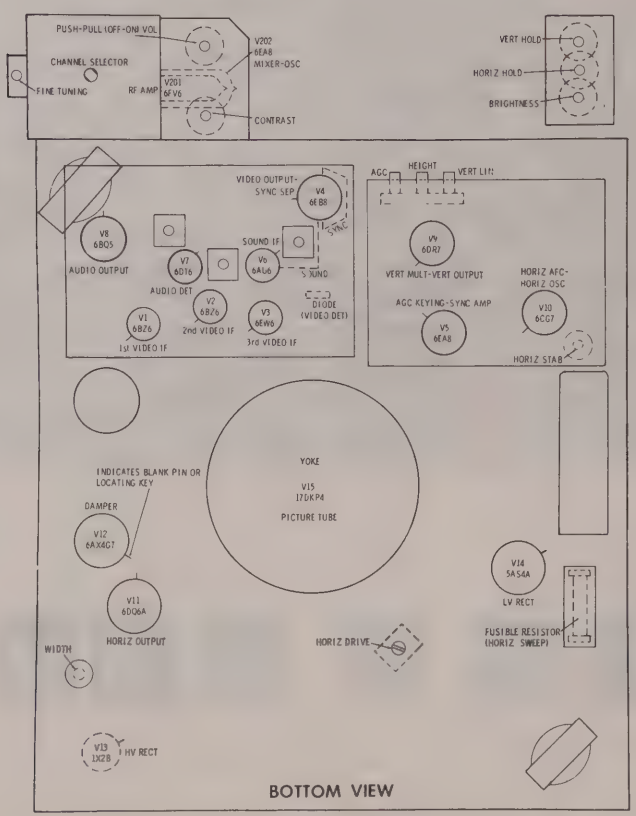
FOLDER 1

RESISTANCE MEASUREMENTS

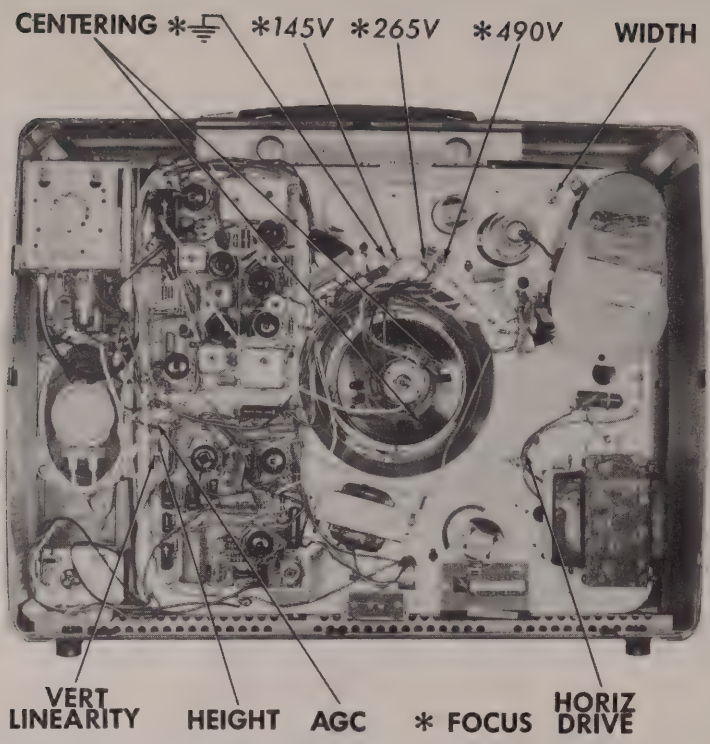
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	120K	1200Ω	0Ω	.1Ω	▲ 220Ω	▲ 220Ω	0Ω		
V2	6BZ6	80K	90K	0Ω	.1Ω	†220Ω	†220Ω	80K		
V3	6EW6	.1Ω	125Ω	.1Ω	0Ω	†3200Ω	†3200Ω	0Ω		
V4	6EB8	0Ω	4.9meg	†2.2meg	.1Ω	0Ω	47Ω	4100Ω	†22K	†7200Ω
V5	6EA8	†17K	†30K	†0Ω	.1Ω	0Ω	550K	†7800Ω	0Ω	†565K
V6	6AU6	47K	0Ω	.1Ω	0Ω	†6700Ω	†6700Ω	82Ω		
V7	6DT6	4Ω	560Ω	0Ω	.1Ω	†560K	†9200Ω	470K		
V8	6BQ5	0Ω	0Ω	470Ω	0Ω	.1Ω	NC	†2500Ω	NC	†2200Ω
V9	6DR7	†280Ω	●1.3meg	● 1.3meg	0Ω	.1Ω	†3meg	● 2.2meg	0Ω	330Ω
V10	6CG7	†0Ω	● 680K	● 530K	0Ω	.1Ω	†56K	●65K	70Ω	0Ω
V11	6DQ6A	TP	0Ω	TP	†10K	1meg	TP	.1Ω	47Ω	TOP CAP †15Ω
V12	6AX4GT	NC	NC	¶ 1meg	NC	†8Ω	NC	.1Ω	0Ω	
V13	1X2B		PINS	1 THRU 9	HAVE	INFINITE	RESISTANCE			TOP CAP † 410Ω
V14	5AS4A	NC	¶	NC	20Ω	NC	22Ω	NC	¶	
V15	17DKP4	0Ω	22K	†560K	†0Ω	NC	TP	●190K	.1Ω	
V201	6FV6	2.4meg	0Ω	0Ω	.1Ω	†9000Ω	†35K	56Ω		
V202	6EA8	†3100Ω	150K	INF	0Ω	.1Ω	INF	0Ω	INF	INF
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
▲ MEASURED FROM PIN 7 OF V2.
† MEASURED FROM 265V SOURCE.
† MEASURED FROM PIN 3 OF V12.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART

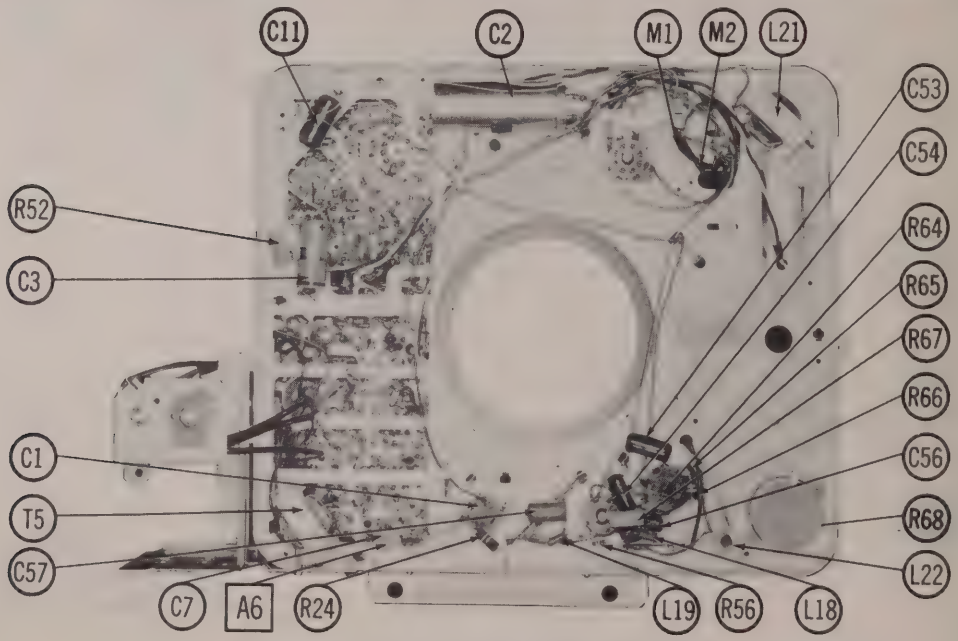


CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Before adjusting the Stabilizing slug (B1), the Horizontal Drive and the Width must be properly adjusted.

Set the Horizontal Hold to the pull-in point. Turn the Width slug (B2) fully counterclockwise and turn Horizontal Drive Trimmer (B3) counterclockwise until a bright vertical line appears near the center of the raster, then turn clockwise until the line just disappears. If no line appears, leave B3 fully counterclockwise. With the Brightness set to normal level, adjust the Width slug (B2) for an overscan of approximately 3/4" on each side of the screen at normal line voltage. Connect a short jumper across the terminals of the Horizontal Stabilizing coil (L20B) short the grid (pin 2) of the 6CG7 (V10) to chassis with a small screwdriver. Adjust the Horizontal Hold for an upright picture (may appear to float back and forth across the screen). Remove the jumper from across L20B and adjust B1 to again obtain a picture in an upright position. When B1 is properly adjusted, alternately shorting and removing short should not cause the picture to lose sync, but instead cause a slight sideways shift of the picture. Remove the short from the grid of the 6CG7.



CHASSIS—FRONT VIEW

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

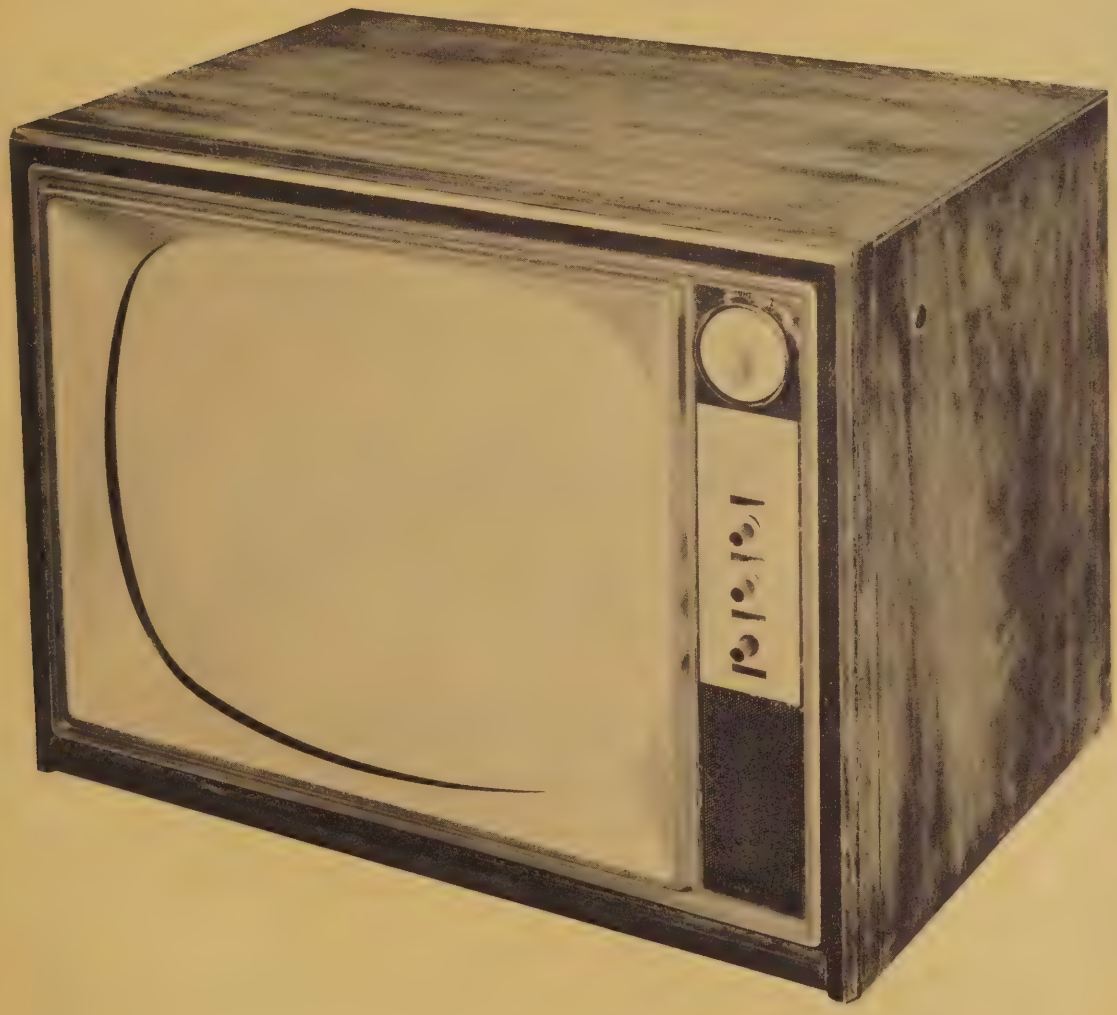
TRAV-LER MODELS 921-K-820, U, 921-T-800, U (Ch. 1051-49)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRAV-LER MODELS 921-K-820, U,
921-T-800, U (Ch. 1051-49)



MODEL 921-T-800 (Ch. 1051-49)

TRAV-LER MODELS 921-K-820, U,
921-T-800, U (Ch. 1051-49)

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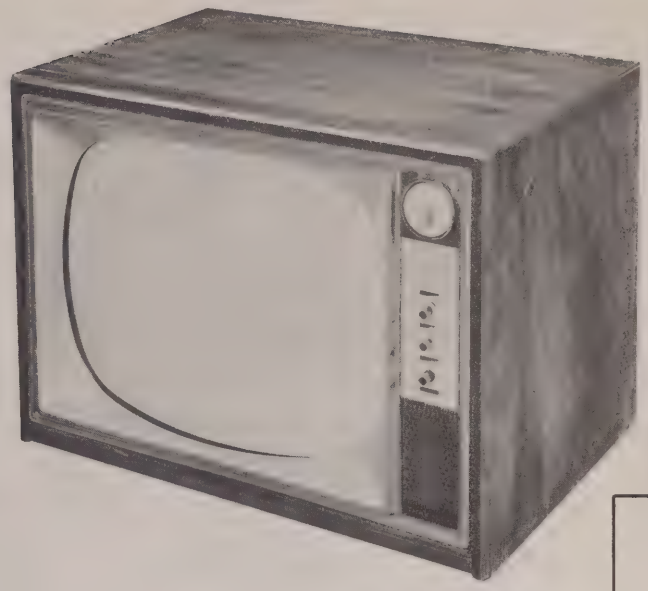
TRAV-LER MODELS 921-K-820, U, 921-T-800, U (Ch. 1051-49)

TRAV-LER MODELS 921-K-820, U, 921-T-800, U (Ch. 1051-49)



MODEL 921-T-800 (Ch. 1051-49)

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL MODEL 921-T-800

1. Remove 11 screws holding rear cover, antenna leads, and rear cover.
2. Remove 6 push-on type knobs from the front.
3. Remove speaker leads, yoke plug, HV lead and picture tube socket.
4. Remove 4 metal screws holding control panel.
5. Remove 6 chassis bolts from the bottom of the cabinet.
6. Remove the chassis.

TRADE NAME	Trav-Ler Models 921-K-820, U, 921-T-800, U (Ch. 1051-49)
MANUFACTURER	Trav-Ler Radio & Tele. Corp., 571 W. Jackson Blvd., Chicago 6, Illinois
TYPE SET	Television Receiver
TUBES	VHF-Sixteen, UHF-Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 170 Watts, 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

For picture tube, and safety glass cleaning, it is necessary to remove the chassis. (See "Disassembly Instructions".)

FUSE

One fuse is used for low voltage power supply protection. (For location, see "Tube Placement Chart".)
One fuse wire is used for filament protection. (For location, see M3 in photo "Chassis Bottom View".)

TUNER OSCILLATOR ADJUSTMENTS

To touch-up the VHF Oscillator, remove the plug button located on the upper right side of the cabinet.

AGC

The AGC may be varied by means of an AGC control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 6 of the picture tube to various voltage points. (For location, see photo "Cabinet-Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENTS

The Horizontal Frequency slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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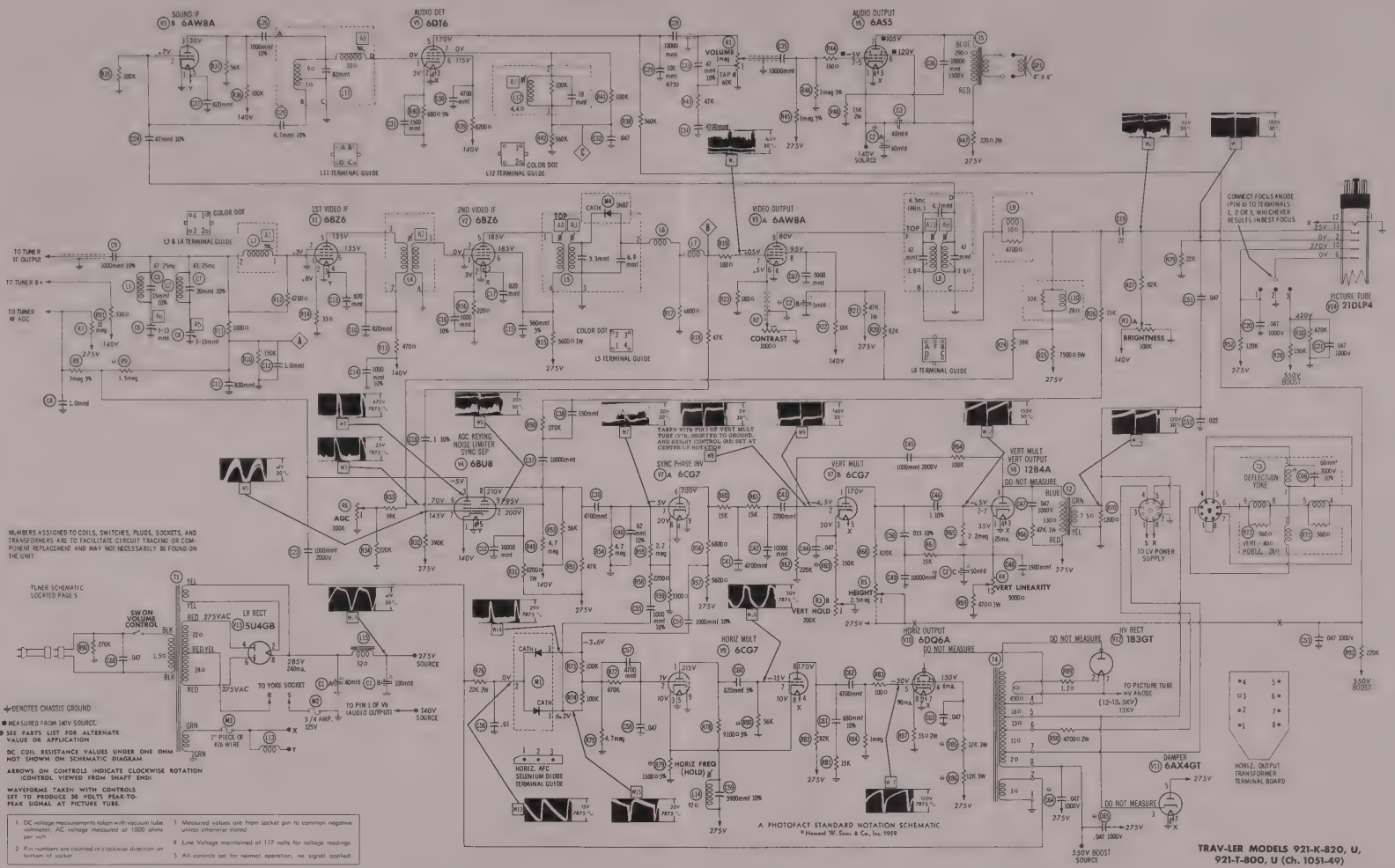
JA459

SET 457 FOLDER 2


SOUND IF
Y3 B 6AW8A
AUDIO DET
V5 6DT6
AUDIO OUTPUT
V6 6AS5
VOLUME
1 meg
TAP @ 60K
BLUE
RED
4" X 6"
L11 TERMINAL GUIDE
L12 TERMINAL GUIDE
COLOR DOT
1ST VIDEO IF
V1 6BZ6
2ND VIDEO IF
V2 6BZ6
TOP
CATH
1N87
VIDEO OUTPUT
V3 A 6AW8A
CONTRAST
1000Ω
L3 & L4 TERMINAL GUIDE
L5 TERMINAL GUIDE
L6 TERMINAL GUIDE
4.5mc (MID.)
CONNECT FOCUS ANODE (PIN 6) TO TERMINALS 1, 2 OR 3, WHICHEVER RESULTS IN BEST FOCUS
PICTURE TUBE
V14 21DLP4
BRIGHTNESS
100K
TO TUNER IF OUTPUT
TO TUNER B+
TO TUNER AGC
AGC KEYING NOISE LIMITER SYNC SEP
V4 6BU8
AGC
100K
SYNC PHASE INV
V7 A 6CG7
VERT MULT
V7 B 6CG7
VERT MULT VERT OUTPUT
V8 12B4A
DO NOT MEASURE
DEFLECTION YOKE
TO LV POWER SUPPLY
VERT LINEARITY
5000Ω
VERT HOLD
200K
HEIGHT
2.5meg
HORIZ OUTPUT
V10 6DQ6A
DO NOT MEASURE
HV RECT
V12 1B3GT
TO PICTURE TUBE HV ANODE (12-13.5KV)
13KV
HORIZ MULT
V9 6CG7
HORIZ FREQ (HOLD)
HORIZ. AFC SELENIUM DIODE TERMINAL GUIDE
DAMPER
V11 6AX4GT
DO NOT MEASURE
HORIZ. OUTPUT TRANSFORMER TERMINAL BOARD
TAKEN WITH POT OF VERT MULT TUBE (V7), SHORTED TO GROUND, AND HEIGHT CONTROL (R83) SET AT CENTER OF ROTATION
TUNER SCHEMATIC LOCATED PAGE 5
SW ON VOLUME CONTROL
LV RECT
V13 5U4GB
285V 240mA.
275V SOURCE
TO YORKE SOCKET
3/4 AMP. 125V
TO PIN 1 OF V6 (AUDIO OUTPUT)
140V SOURCE
1" PIECE OF #26 WIRE
5.9OV BOOST SOURCE
5.9OV BOOST
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
DENOTES CHASSIS GROUND
MEASURED FROM 140V SOURCE.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE
1 DC voltage measurements taken with vacuum tube voltmeter, AC voltage measured at 1000 ohms per volt
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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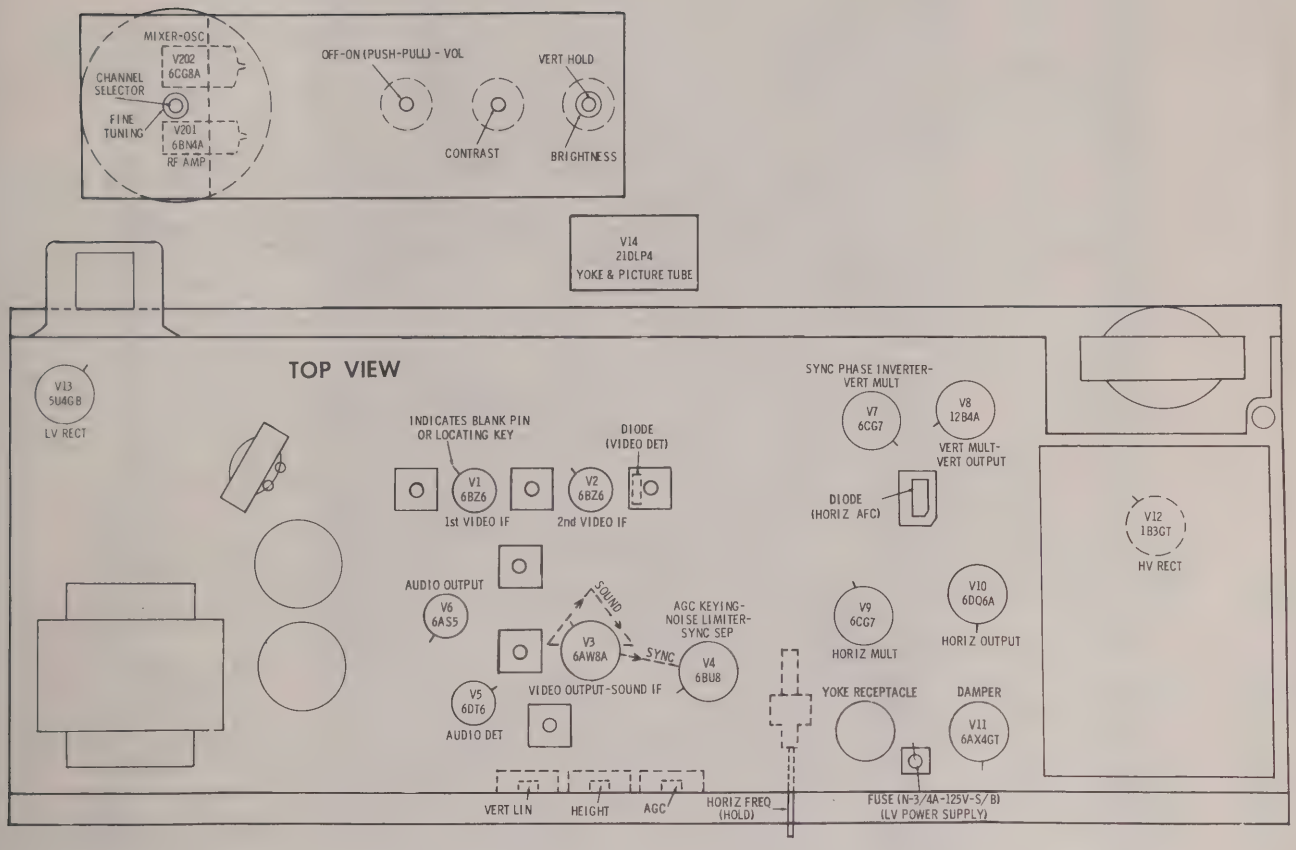
TRAV-LER MODELS 921-K-820, U,
921-T-800, U (Ch. 1051-49)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

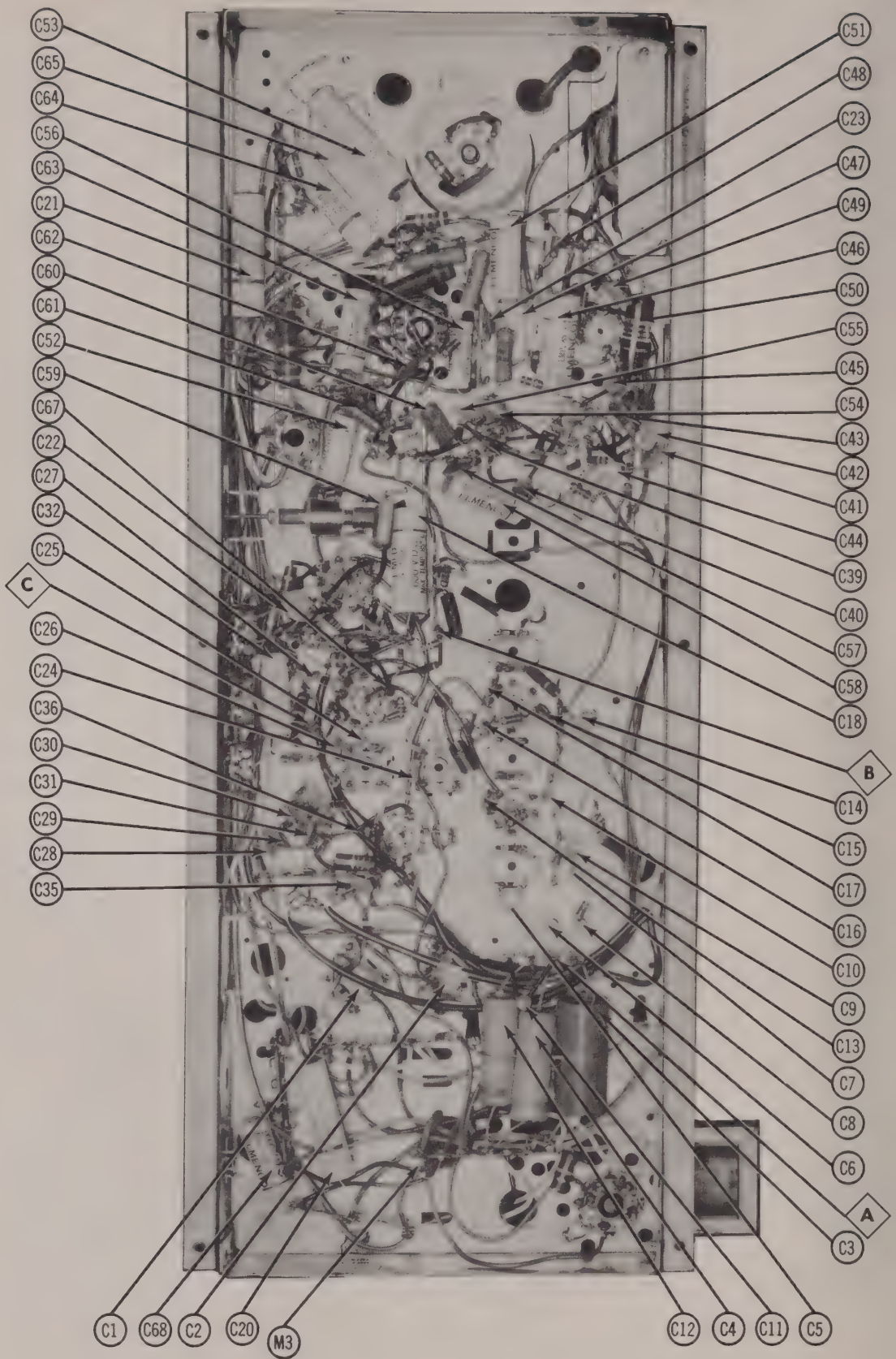
The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (B+), V13, Fuse Wire (Fil.)

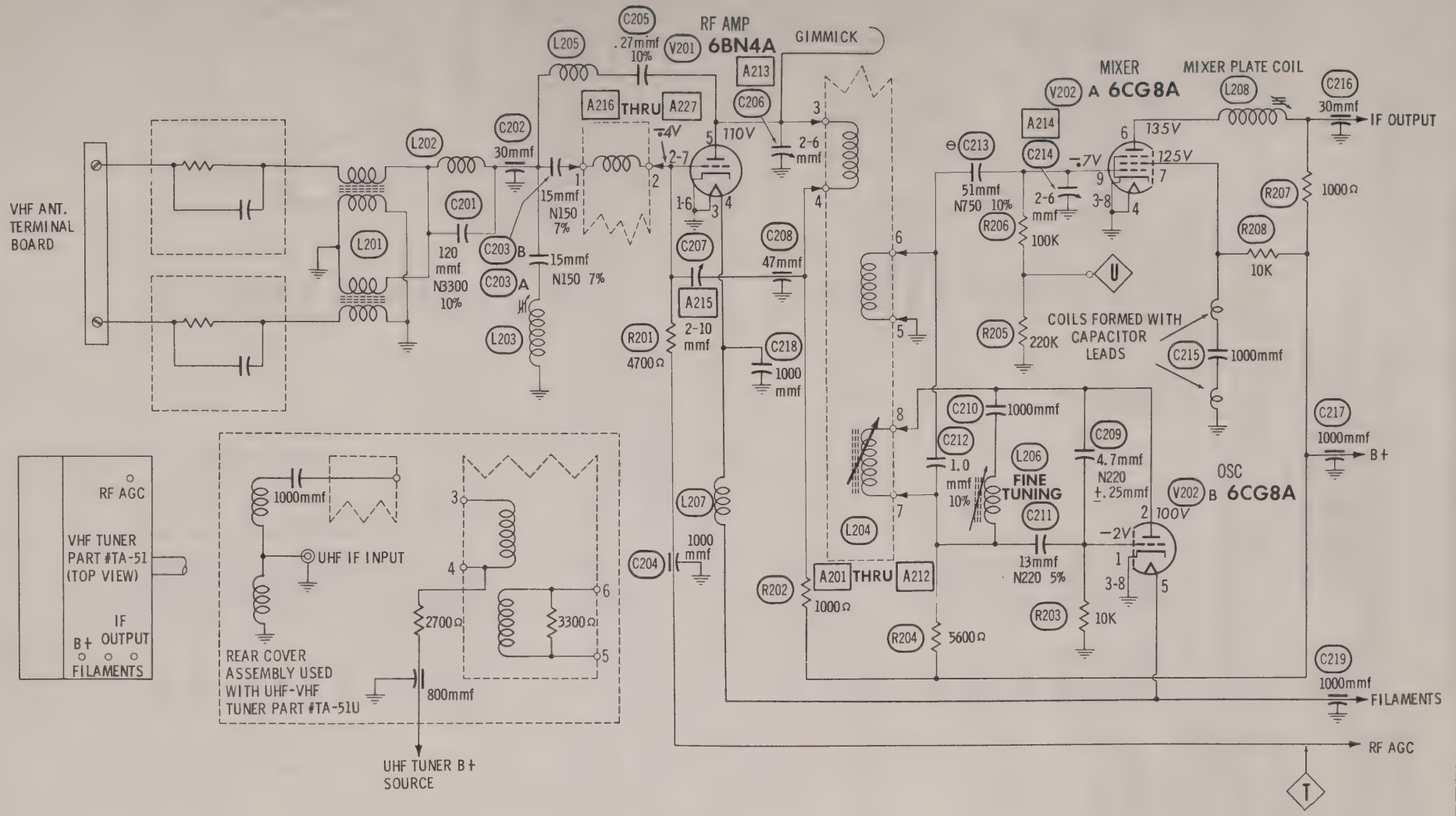
SWEEP FAILURE
No raster, has sound V9, V10, V11, V12, V14, V13
No vertical deflection V7, V8
Poor vert. linearity or foldover V7, V8
Poor horiz. linearity or foldover V9, V10, V11
Narrow picture V13
Vert. off freq. V7, V8
Horiz. off freq. V9, Diode (Horiz. AFC)

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, Diode (Video Det.), V3
No pic, no sound, has snow V201, V202
No pic, has sound, has raster V3, V14
Has pic, no sound V3, V5, V6
Overloaded picture V4

SYNC FAILURE
No vert. sync V7, V8
No horiz. sync V7, Diode (Horiz. AFC)
No vert. or horiz. sync V4



CHASSIS BOTTOM VIEW-CAPACITOR AND ALIGNMENT IDENTIFICATION



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TUNER TA-51, U

TRAV-LER MODELS 921-K-820, U, 921-T-800, U (Ch. 1051-49)

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A213, A214, A215..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Set the Fine Tuning to the center of its range.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

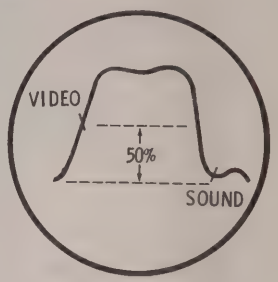


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (U). Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Restore bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by compressing or expanding coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

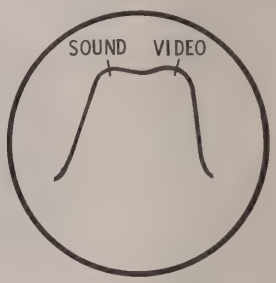


FIG. 202

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools:
A1 thru A4, A7 thru A10 ... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6 ..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520
Mixer Plate Coil ..... GENERAL CEMENT #9296, 9297
WALSCO #2546, 2547

VIDEO IF ALIGNMENT

Set Contrast fully clockwise and AGC fully counterclockwise.
Connect the negative lead of a 3 volt bias supply to point Ⓐ . Positive to chassis.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44.0MC (10MC Swp)	41.25MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 10K to point Ⓑ . Low side to chassis. (Across Video Det. load)	A1, A2, A3, A4, & Mixer Plate Coil	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A2 to place 45.75MC marker at 50% on curve, A1 to correct low frequency side of curve, A3 for MINIMUM dip and A4 for proper tilt.
2.	"	"	"	41.25MC 47.25MC	"	"	A5, A6	Adjust A5 to place 41.25MC marker in proper trap notch. Adjust A6 to place 47.25MC marker in other trap notch.

SOUND IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
3.	.05mfd	High side to point Ⓑ . Low side to chassis.	4.5MC (15KC Swp)	Any non-interfering channel	Across voice coil. Connect DC probe of VTVM to point Ⓒ . Common to chassis.	A7	Use high signal input. Set Volume for audible level. Adjust A7 for maximum audio on scope. If two peaks occur, select the one giving the highest meter reading.
4.	"	"	"	"	"	A8, A9	Reduce the signal level to the point where the audio on the scope starts to break up. Adjust A8 and A9 for cleanest maximum audio output on scope. Reduce the signal level still farther. Retouch A8 and A9 for cleanest maximum audio on scope.

SOUND IF ALIGNMENT USING AIR SIGNAL AND VTVM

Set the Contrast fully clockwise and tune in an air signal.
Connect the positive lead of the VTVM to point Ⓒ , negative lead to chassis.
Preset A7 fully counterclockwise. Next, turn A7 clockwise until a peak is obtained on the meter. The point of maximum undistorted sound as judged by listening, will occur slightly past this peak and will be between 2.5 and 3.5 volts on the meter. Tune A7 for maximum undistorted sound and not peak voltage.
Reduce the signal by disconnecting the antenna or detuning the Fine Tuning until the sound is distorted. Adjust A8 and A9 for maximum undistorted sound. Further reduce the sound and retouch A8 and A9. Continue reducing the signal and retouching A8 and A9 until optimum results are obtained. It may be necessary in some cases to retouch A7 for MINIMUM buzz at strong signal levels and A9 for cleanest sound at weak signal levels.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
5.	.05mfd	High side to point Ⓑ . Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	DC probe thru diode det. (Fig. 2) to pin 7 (cathode) of picture tube. Common to chassis.	A10	Adjust for MINIMUM deflection.

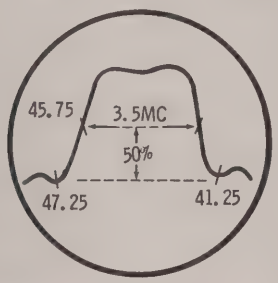


FIG. 1

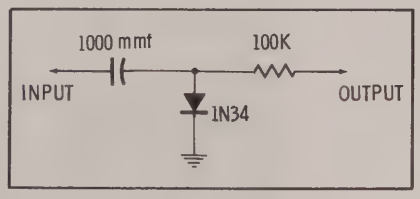


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No	USE	TYPE	NOTES
V1	1st Video-IF Amp	6BZ6	
V2	2nd Video-IF Amp	6BZ6	
V3	Video-Output-Sound IF Amp	6AW8A	
V4	AGC, Keying-Noise Limiter-Sync Sep.	6BU8	
V5	Audio Det.	6DT6	
V6	Audio Output	6AS5	

ITEM No	USE	TYPE	NOTES
V7	Sync Phase Inv -Vert Mult.	6U7	
V8	Vert. Mult. -Vert. Output	12B4A	
V9	Horiz. Mult.	6U7	
V10	Horiz. Output	6DQ6A	
V11	Damper	6AX4GT	
V12	HV Rect.	1B3GT	
V13	LV Rect	5U4GB	

PICTURE TUBE

ITEM No	REPLACEMENT DATA				NOTES
	TRAV-LER PART No	GENERAL ELECTRIC PART No	RCA PART No	SYLVANIA PART No	
V14	21DLP4		21DLP4 ①	21DLP4 ②	① Aluminized ② Silver Screen "65"

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	40	350	EC-115	AFE3-64-25	BO483	FP347	TMD-61	TVL-2780	
B	100	350							
C2A	80	300		AFE4-66-10	D0676	FP419.11	TMQ-161	TVL-4709	Note 1
B	80	300							
C	150	50							
C3	40	200	EC-113	PRS350V40	BR4025	TC58	TD-40-350	TVA-1511	

Note 1. Some versions may use 60mfd ① 300V, 5mfd ② 350V, 50mfd ② 50V (Part #EC-114).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	TRAV-LER PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	1.0	100			P288N-1.0		CUB3W1	GEM-21	2TM-M1	
C5	15		10%		NPO-SI 15	TCS-15	C10Q15C	CNO-415	5TCC-Q15S 10% *	
C6	3-13									
C7	30		10%		NPO-SI 30	TCS-30	C10Q3C	ET-542	5TCC-Q3S 10% *	
C8	3-15									
C9	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C10	820				BPD-0008	DD-821	L10T82	B-383	5GA-T82	
C11	820				BPD-0008	DD-821	L10T82	B-383	5GA-T82	
C12	1.0	100			P288N-1.0		CUB3W1	GEM-21	2TM-M1	
C13	820				BPD-0008	DD-821	L10T82	B-383	5GA-T82	
C14	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C15	560		5%					JL-156	5GA-T56S 5% *	
C16	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C17	820				BPD-0008	DD-821	L10T82	B-383	5GA-T82	
C18	.1	600	10%		V84CSP1		PMSP1	GTM-601	6TM-P1	
C19	.22	600			P688N-22		CUB6P22	GEM-6023	6TM-P22	
C20	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C21	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C22	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C23	1000	2000			HVD-30-1000	DD30-102	HVB30D1	2HV-210	30GA-D1	
C24	47		10%		NPO-SI 47	TCS-47	C10Q47C	CNO-447	5TCC-Q47S 10% *	
C25	4.7		10%		NPO-SI 4.7	TCS-4R7	C10V47C	CNO-547	5TCCB-V47S 10% *	
C26	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C27	820				BPD-0008	DD-821	L10T82	B-383	5GA-T82	
C28	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C29	100		N750		N750-DI 100	DTN-100	C10T1U	CNT-310	5TCU-T1	
C30	4700				BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C31	1500				BPD-0015	DD-152	BYA10D15	B-251	5SK-D15	
C32	.047	200			P288N-047	DF-503	CUB2A47	GEM-4147	2TM-S47	
C33	47		10%		NPO-SI 47	TCS-47	C10Q47C	CNO-447	5TCC-Q47S 10% *	
C34	4700				BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C35	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C36	10000	1500			DAC-37	DD-103	HVE15S1	2HV-110	20HKS-S1	
C37	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C38	150				BPD-00015	DD-151	L10T15	B-315	5GA-T15	
C39	4700				BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C40	82		10%		DI-82	DD-820	L10Q82	CNO-482	5SK-Q82S 10% *	
C41	4700				BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C42	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C43	2200				BPD-0022	DD-222	BYA10D22	B-222	5SK-D22	
C44	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C45	1000	3000			HVD-30-1000	DD30-102	HVB30D1	2HV-210	30GA-D1	
C46	.1	600	10%		V84CSP1		PMSP1	GTM-601	6TM-P1	
C47	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C48	1500				BPD-0015	DD-152	BYA10D15	B-215	5SK-D15	
C49	10000				BPD-01	DD-103	BYA10S1	B-110	5SK-S1	
C50	.033	600	10%		V84CS33		PMS33	GTM-6133	6TM-S33	
C51	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C52	.022	600			P688N-022		CUB6S22	GEM-6122	6TM-S22	
C53	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C54	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C55	1000		10%		DI-1000			JL-210	5GA-DI5 10% *	
C56	.01	600		D6-103	P688N-01	DD-103	CUB6E	GEM-611	6TM-S1	
C57	4700			BPD-0047	BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C58	.047	600		P688N-047	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C59	3900		10%		1464-0039		1R5D39	MCD463	MS-239	
C60	820		5%		1464-00082		1R5T82		MS-382	
C61	680		10%		1464-00068		1R5T56		MS-368	
C62	4700			BPD-0047	BPD-0047	DD-472	BYA10D47M	B-247	5SK-D47	
C63	.047	600		P688N-047	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C64	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C65	.047	1000			P1088N-047		CUB1S47	GEM-10147	10TM-S47	
C66	68	3000	10%						30GA-Q68S 10% *	④⑤
C67	5000				BPD-005	DD-502	BYA10D5	B-250	5SK-D5	
C68	.047	600		P688N-047	P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
① Some versions may use a single .1mfd ② 1000V to replace C64 and C65.
③ Value may vary. Replace with original value.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRAV-LER PART No	CENTRALAB PART No	CLAROSTAT PART No	IRC PART No	MALLORY PART No	
R1A	1meg	½	VC-173				PP18A	Volume, Tap ② 50K
B	Switch							Push-Pull Off-On
R2A	1000	½	VC-178	B-506	A47-1000-S	QI7-168	U3	Contrast
B	Shaft			Not Req.	F3-3	Not Req.	Not Req.	
R3A	100K	½	VC-174	F1-31		▲ (U)-1118	▲ (UR4047	Brightness
B	200K	½		R3-33				Vert. Hold
R4A	5000Ω	½	VC-85	BX-10	B47-5000-S	QII-114	SU-14	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TQ	Not Req.	
R5A	2.5meg	½	VC-75	BX-25	B47-2.5meg-S	QII-259	SU-246	Height
B	Shaft			Not Req.	Not Req.	TQ	Not Req.	
R6A	100K	½	VC-177	BX-40	B47-100K-S	BII-136	PTA15L	AGC
B	Shaft			Not Req.	Not Req.	TMS	Not Req.	

* "Concentrictt" Equivalent: K-3 Kit with Base Elements & Shafts: BII-138, PI-304 (Panel) BII-129, RI-230 (Rear)

▲ "STA-LOC" Equivalent: FA15L, RU15L, OF2125, IK3825

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		TRAV-LER PART No.	NOTES
	OHMS	WATT		
R7	10meg			
R8	2meg 5%			
R9	1.5meg			Note 1
R10	150K			
R11	1000Ω			
R12	2700Ω			
R13	470Ω			
R14	33Ω			
R15	5600Ω	1		
R16	220Ω			
R17	6800Ω			
R18	47K			
R19	100Ω			
R20	82K			Note 2
R21	47K	1		
R22	18K			
R23	180Ω			
R24	39K			
R25	7500Ω	5		
R26	15K			
R27	82K			
R28	150K			
R29	22K			
R30	470K			
R31	8200Ω	1		
R32	390K			
R33	39K			
R34	100K			
R35	100K			
R36	100K			Note 3
R37	56K			Note 4
R38	560K			
R39	8200Ω			
R40	6800Ω 5%			
R41	100K			Note 5
R42	560K			Note 5
R43	47K			
R44	150Ω			
R45	1meg 5%			
R46	1meg 5%			
R47	220Ω	2		
R48	15K	2		
R49	4.7meg			

ITEM No.	RATING		TRAV-LER PART No.	NOTES
	OHMS	WATT		
R50	270K			
R51	47K			
R52	120K			
R53	56K			
R54	4.7meg			
R55	2.2meg			
R56	6800Ω			
R57	5600Ω			
R58	2200Ω			
R59	3300Ω			
R60	15K			
R61	15K			
R62	220K			
R63	150K			
R64	100K			
R65	2.2meg			
R66	47K	1		
R67	15K			
R68	620K			
R69	470Ω	1		
R70	1200Ω			
R71	560Ω			
R72	560Ω			
R73	100K			
R74	100K			
R75	4.7meg			
R76	22K	3		
R77	470K			
R78	9100Ω 5%			
R79	1300Ω 5%			Note 3
R80	56K			Note 4
R81	15K			
R82	82K			
R83	100Ω			
R84	1meg			
R85	12K	3		Note 5
R86	12K	3		Note 5
R87	33Ω	2		
R88	3600Ω	2		
R89	1.2Ω			
R90	270K			
R91	330Ω			
R92	220K			

Note 1. Some versions may use 2.2meg in this application.
Note 2. Some versions may use 56K in this application.
Note 3. Some versions may use 15000Ω 5% in this application.
Note 4. Some versions may use 68K in this application.
Note 5. Some versions may use a single 22K 4W to replace R85 and R86.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		TRAV-LER PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	47.25MC Trap	L-161						
L2	41.25MC Trap	L-161-1						
L3	1st Video IF	L-150				6221 ▲		
L4	2nd Video IF	L-151	17-5004	17-5004	TV-126	6234		
L5	3rd Video IF	L-152						
L6	RF Choke	L-160	19-1005	19-1005	BC-566	4612		
L7	RF Choke	L-158						
L8A	4.5MC Trap	L-154						①
B	1st Sound IF							② Prt. tap. ③ TH
L9	Series Peaking Coil	L-162						
L10	Shunt Peaking Coil	L-163						
L11	2nd Sound IF	L-155						
L12	Quadrature Coil	L-110A	17-1031 ▲	17-1031 ▲		1481 ▲	SD-5 ▲	
L13	Fil. Choke	L-164	19-1001	19-1001	BC-562	4604		1.5uh

▲ Disregard secondary winding. ▪ Parallel with 100K resistor. ① Wound on 4700Ω resistor. ② Wound on 10K resistor.

TRANSFORMER (HORIZ. OSC.)

ITEM No.	DC RES.		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Miller PART No.	Ram PART No.	Thorderson PART No.	
L14	97Ω		L-156	HS-5 *	TV-163 *	6210 *	H-102 *	HS-5 *	Horiz. Stabilizer * Enlarge mtg. hole.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE @ CURRENT 1000 ⁰/₀₀	TRAV-LER PART No	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No	Thorderson PART No	Triad PART No
L15	240A	52Ω	1 Hy	FC-18	26C44	C-2996	F-801	C-2328	26C44	C-27X

TRANSFORMER (POWER)

ITEM No	RATING			REPLACEMENT DATA						
	PRI	SEC 1	SEC 2	TRAV-LER PART No	Halldorson PART No	Merit PART No	Ram PART No	Stancor PART No	Thorderson PART No	Triad PART No
T1	117V @ 1.6A	550VCT @ 240A	5V @ 3A	TR-52A						
	SEC 3	SEC 4	SEC 5							
	6.3V @ 9.2A									

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No	USE	REPLACEMENT DATA								
		TRAV-LER PART No	Halldorson PART No	Merit PART No	Ram PART No	Rogers PART No	Stancor PART No	Thorderson PART No	Triad PART No	
T2	Vert Output	TR-26B	26B53	A-2823	V307	V034	A-8143	26B53	A-108X	
T3	Yoke-Horiz.(59.5MH) (80⁰)-Vert. (39MH) Rear Cover & Centering Device Yoke Clamp	L-118B	Y-16 ① ②	MDF-92 ① ②	Y90F19/43 ① ②	PCM2045 ① ②	DY-18A ① ③	Y-16 ① ③	Y-4L ② NW-3 ② YC-1	
T4	Horiz Output	TR-53	FLY-78 *	HVO-54 *	X139 *	FFR172 *	A-8355 *	FLY-76 *	CL-1 D-151R *	

① Use original rear cover and centering device, and horizontal damping network, if necessary.
② Connect same as original.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

Use Original Width Coil Unless Replacement Type Is Listed

	ORIGINAL TERMINAL CONNECTIONS	Halldorson Replacement Connections	Merit Replacement Connections	Ram Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thorderson Replacement Connections	Triad Replacement Connections
	4	5	5	5	5	5	5	4
	5	4	4	4	4	4	4	6
	6	See Note ③	NC See Note ③	See Note ③	NC See Note ③	See Note ③	NC See Note ③	3
	7	3	2	2	3	2	3	7
	8	1	1	1	1	1	1	8
	3	7	7	7	7	7	7	2
	1	8	8	8	8	8	8	1
Special Notes		②④	②④	④	②④	②④	②④	

② Remove R88, C66 and fifth lead of yoke. Install new damping network consisting of 150Ω and 82mmf across horizontal yoke terminals #3 and #7.
④ Remove one turn from filament winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA						NOTES
	PRI.	SEC.	TRAV-LER PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thorderson PART No.	Triad PART No.	
T5	4700Ω	3-4Ω	AT-50	24248	A-3026	AU-601	A-3877	24248	S-6X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP	TRAV-LER PART No	QUAM PART No.	
SP1	4" x 6"	PM	3-4Ω	SPK-84	46A1	

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	TRAV-LER PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No	
M1		SR-15 ①	K1615 ①	SD-91 ②			① Selenium Type. ② Silicon Type

FUSES

ITEM No	TYPE	RATING	REPLACEMENT DATA						
			TRAV-LER PART No.		LITTELFUSE PART No.		BUSS PART No	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M2	N	3/4A 125V 5/8	F-13		333.750 (N-3/4A-125V 5/8)	340010	N 3/4	HN 1/2 to 3/4
M3	1" #26 Wire							

PARTS LIST AND DESCRIPTIONS (Continued)

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TRAV-LER PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M4	1N87	1N87	1N60		1N60	Video Detector (Pigtail)

MISCELLANEOUS

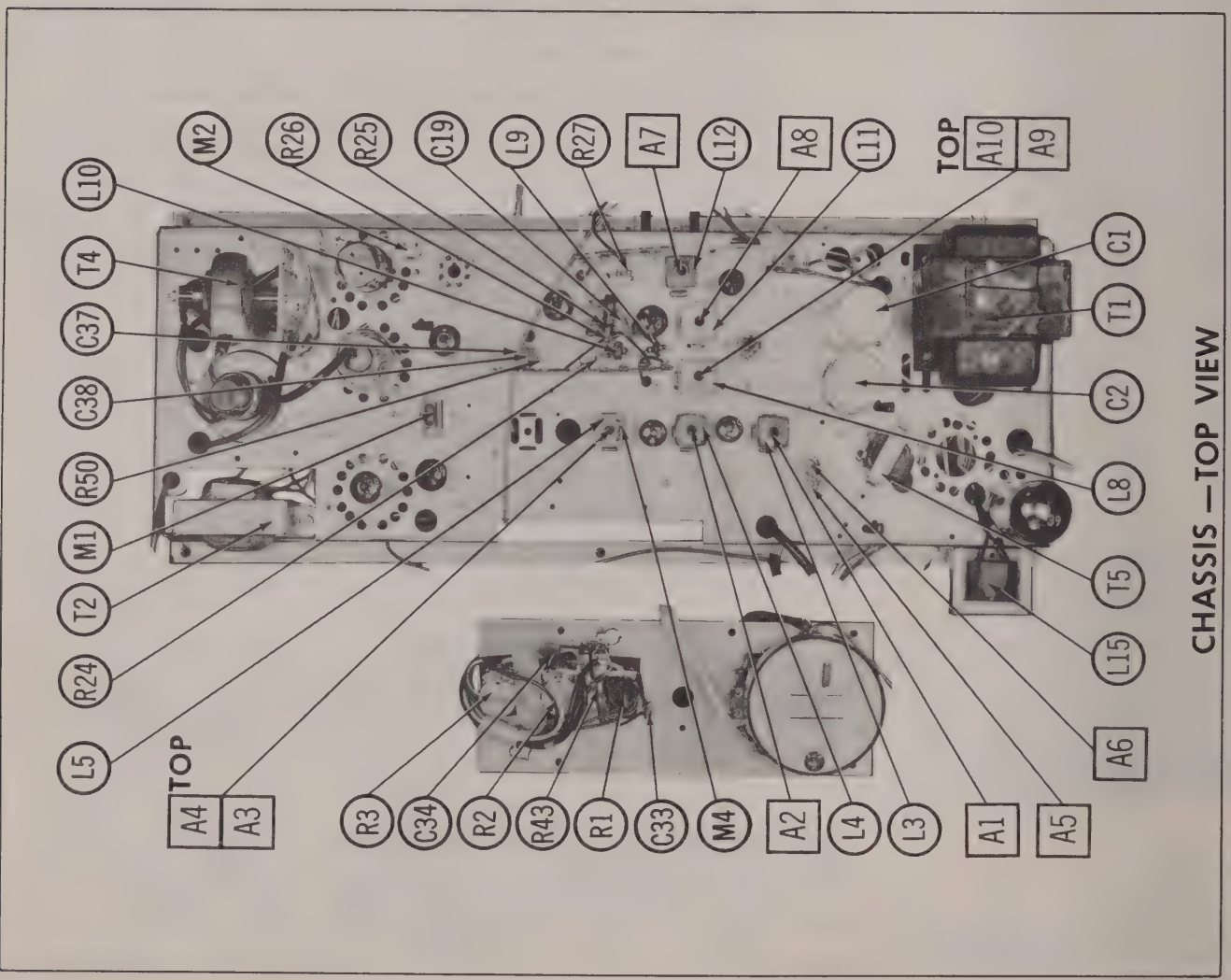
ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M5	Tuner Tuner	TA-51 TA-51U	VHF VHF with UHF provisions

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

High Voltage Lead	Use BELDEN No. 8869
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor



TUNER PARTS LIST AND DESCRIPTIONS

TA-51,U

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V201	RF Amp.	6BN4A	

ITEM No.	USE	TYPE	NOTES
V202	Mixer-Osc.	6CG8A	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C201	120		N3300 10%	13L-031						
C202	30			13M350U300N-02						
C203A	15		N150 7%	13L8PG150N2						
B	15		N150 7%							
C204	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	
C205	.27		10%	13D-111-45						
C206	2-6			31B-902-01		829-6		CT552		
C207	2-10			31B-902-09		829-10				
C208	47			13M320U470J-09	EF-00005	MFT-50				
C209	4.7		N220 ±.25mmf	13L8R4R7C						
C210	1000			13LX102Z	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C211	13		N220 5%	13L8R130J						
C212	1.0		10%	13D-111-35	NPO-SI 1.0	TCZ-1		CNO-510	5TCCB-V1S 10% *	
C213	51		N750 10%			TCN-51	C10Q51U		5TCU-Q51S 10% *	①
C214	2-6			31B-902-01		829-6		CT552		
C215	1000			3LJ-024	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C216	30			13M350U300N-02						
C217	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	
C218	1000			13LX102Z	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C219	1000			13M350EA102Z-01	EF-001	MFT-1000			503C-D1	

Note 1. Some versions may use 51mmf N470 10% in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
NOTE : Part numbers listed above are "Standard Coil" Part Numbers.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		PART No.
	OHMS	WATT	
R201	4700Ω		12TAE472M-01-02-03
R202	1000Ω		12TAE102M-01-02-03
R203	10K		12TAE103M-01-02-03
R204	5600Ω		12TAE562K-01-02-03

ITEM No.	RATING		PART No.	NOTES
	OHMS	WATT		
R205	220K		12TAE224M-01-02-03	
R206	100K		12TAE104M-01-02-03	
R207	1000Ω		12WAE102M-01	
R208	10K		12TAE103M-01	

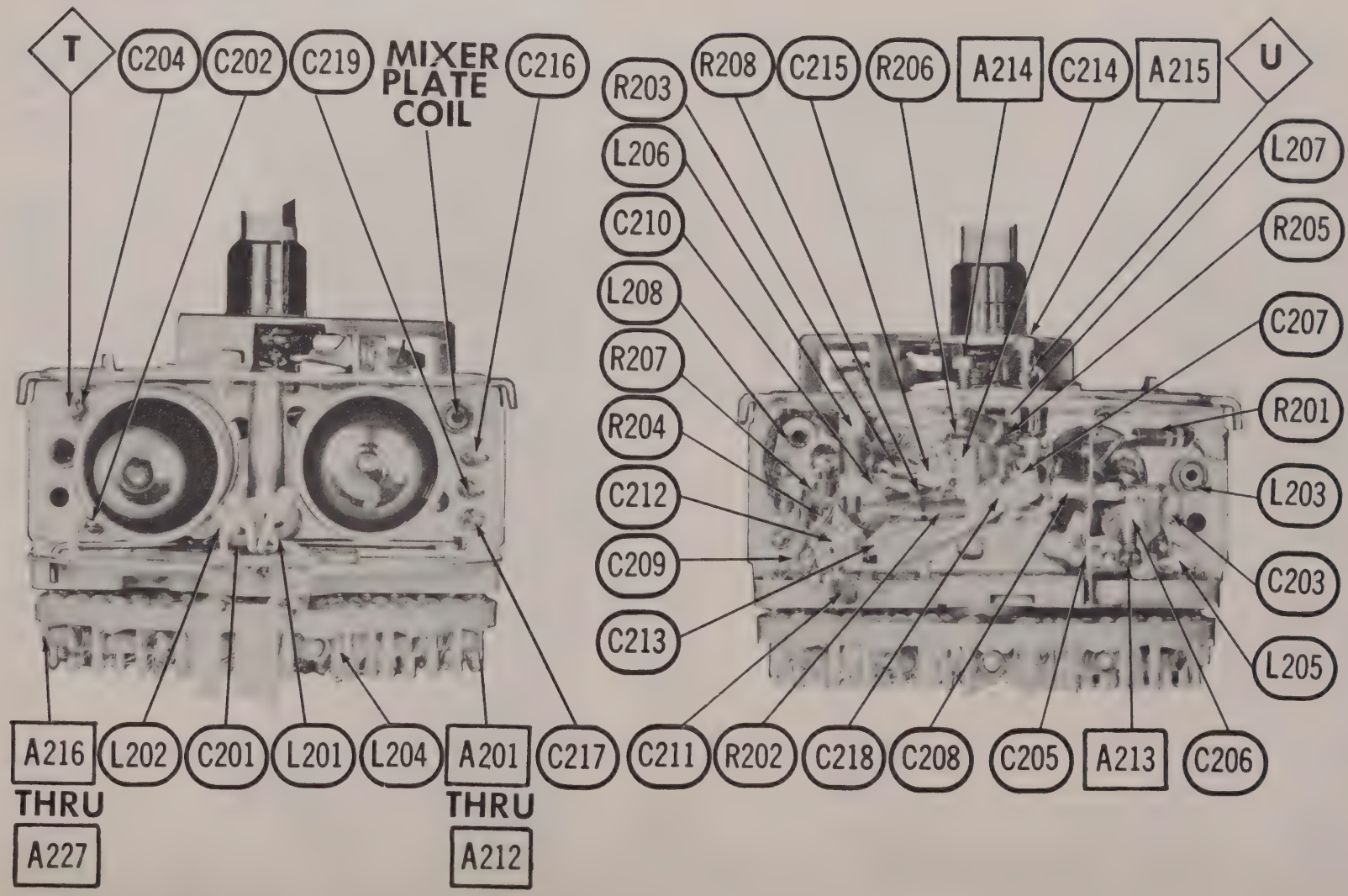
NOTE: Part numbers listed above are "Standard Coil" Part Numbers.

COILS (RF-IF)

ITEM No.	USE	PART No.	NOTES
L201	Ant. Trans.	31T3398-01	Includes L202, L203
L202	RF Choke	34A-748	
L203	IF Trap Coil	34A-762	
L204	Ant., RF, Mixer Grid & Osc. Coils	31T-3361-06	Includes Rotor Disc Assy.

ITEM No.	USE	PART No.	NOTES
L205	RF Choke	34A-1005	
L206	Fine Tuning Coil	34A-787-03	
L207	Fil. Choke	31K-137-027	
L208	Mixer Plate Coil	31UA-580-017	

NOTE: Part Numbers listed above are "Standard Coil" Part Numbers.


T
C204
C202
C219
MIXER PLATE COIL
C216
R203
L206
C210
L208
R207
R204
C212
C209
C213
R208
C215
R206
A214
C214
A215
U
L207
R205
C207
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L202
C201
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A213
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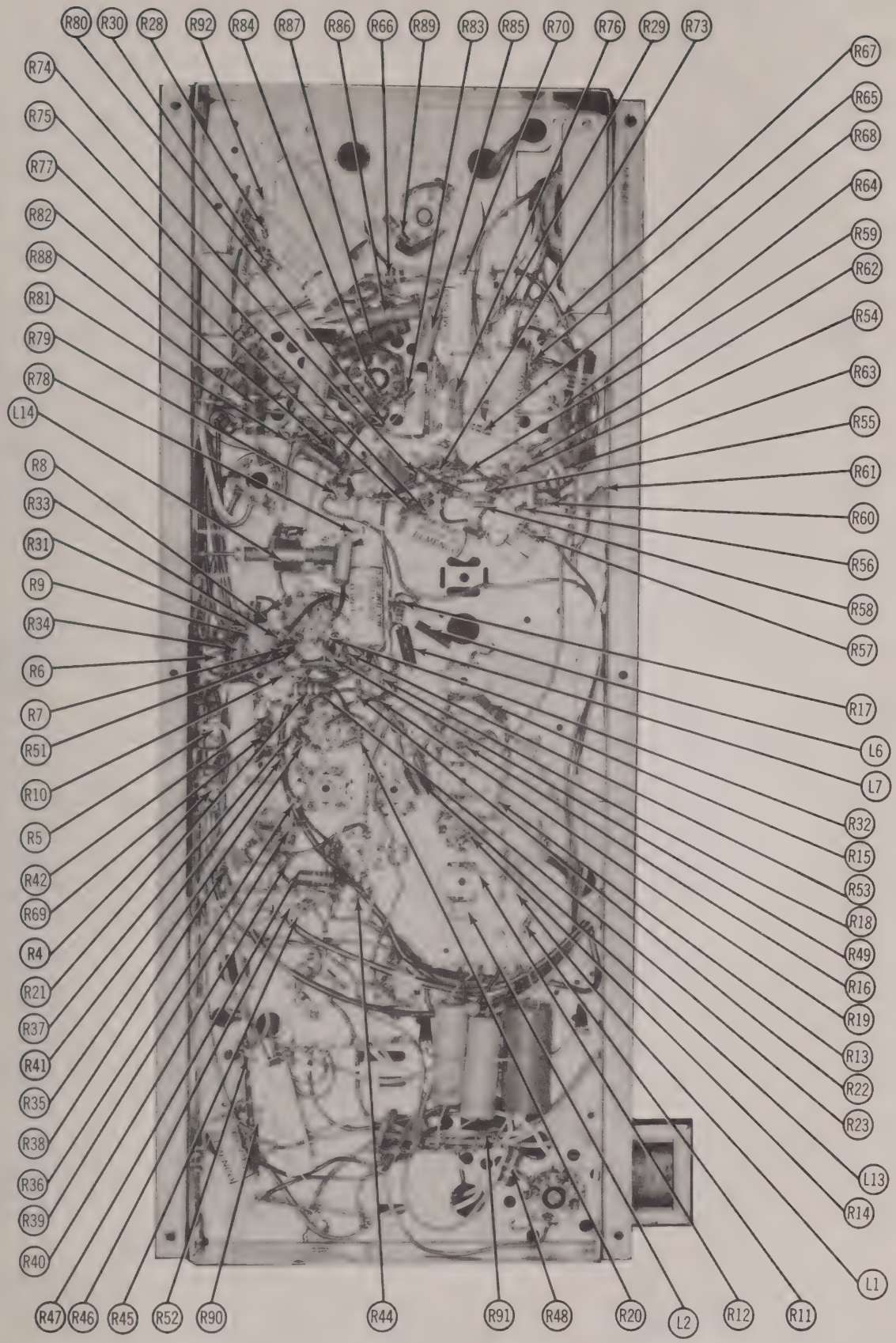
THRU
A227
THRU
A212

TUNER TA-51



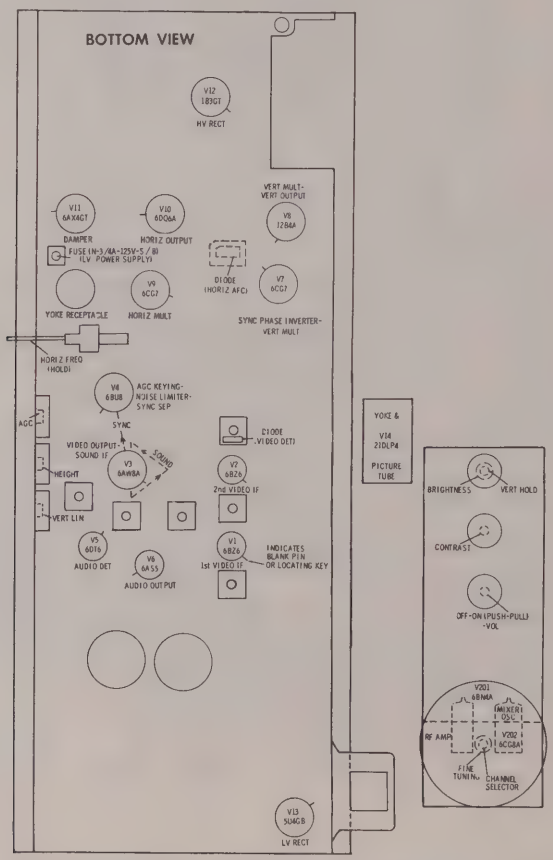
CHASSIS BOTTOM VIEW-RESISTOR AND INDUCTOR IDENTIFICATION

RESISTANCE MEASUREMENTS

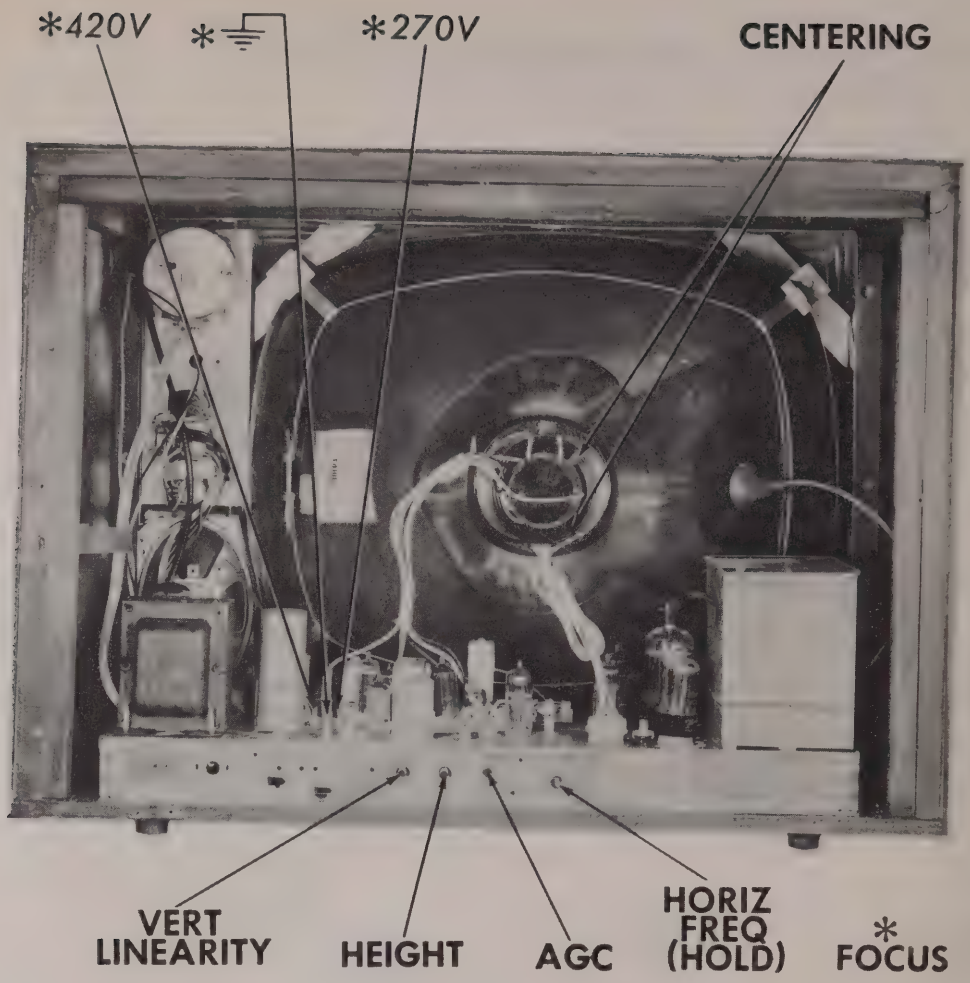
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	33Ω	0Ω	.1Ω	■ 470Ω	■ 470Ω	0Ω		
V2	6BZ6	.1Ω	220Ω	.1Ω	0Ω	†5600Ω	†5600Ω	0Ω		
V3	6AW8A	0Ω	100K	■ 100K	0Ω	.1Ω	● 20Ω	6800Ω	■ 15K	†7500Ω
V4	6BU8	■ 0Ω	†8200Ω	1.7meg	0Ω	.1Ω	†30K	†390K	†33K	■ 4.7meg
V5	6DT6	19Ω	680Ω	.1Ω	0Ω	‡780K	■ 8200Ω	560K		
V6	6AS5	¶ 12K	550K	.1Ω	0Ω	550K	†220Ω	†510Ω		
V7	6CG7	● †2.2meg	220K	● 190K	0Ω	.1Ω	†14K	1.7meg	3300Ω	0Ω
V8	12B4A	● 1500Ω	2.2meg	.1Ω	0Ω	0Ω	NC	2.2meg	NC	†330Ω
V9	6CG7	†9100Ω	1.2meg	1300Ω	.1Ω	0Ω	†82K	56K	1300Ω	0Ω
V10	6DQ6A	NC	0Ω	NC	†24K	1meg	TP	.1Ω	33Ω	TOP CAP ‡16Ω
V11	6AX4GT	NC	NC	¶700K	NC	†0Ω	NC	.1Ω	0Ω	
V12	1B3GT		PINS	1 THRU 8	HAVE	INFINITE RESISTANCE				TOP CAP ‡450Ω
V13	5U4GB	NC	¶	NC	22Ω	NC	24Ω	NC	¶	
V14	21DLP4	0Ω	22K	Pin 6 0Ω	Pin 10 †120K	Pin 11 ● 110K	Pin 12 .1Ω			
V201	6BN4A	0Ω	3.5meg	0Ω	.1Ω	■ 1300Ω	0Ω	3.5meg		
V202	6CG8A	10K	■ 5900Ω	0Ω	0Ω	.1Ω	■ 1300Ω	■ 10K	0Ω	320K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM 275V SOURCE.
■ MEASURED FROM 140V SOURCE.
‡ MEASURED FROM PIN 3 OF V11.

NC NO CONNECTION.
TP TIE POINT.



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

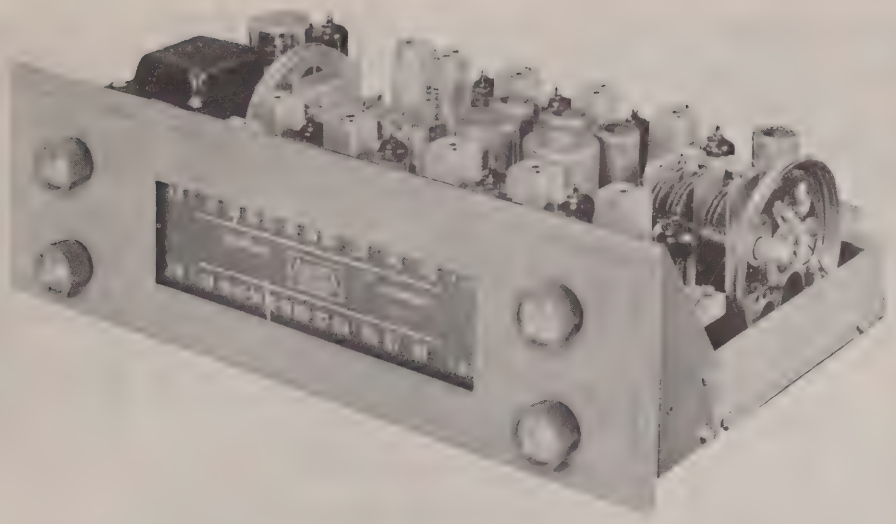
Set the Brightness and Contrast controls for a normal picture.

Turn the Horizontal Frequency (Hold) clockwise until the picture loses sync. It may be necessary to switch off channel and back again for picture to lose sync.

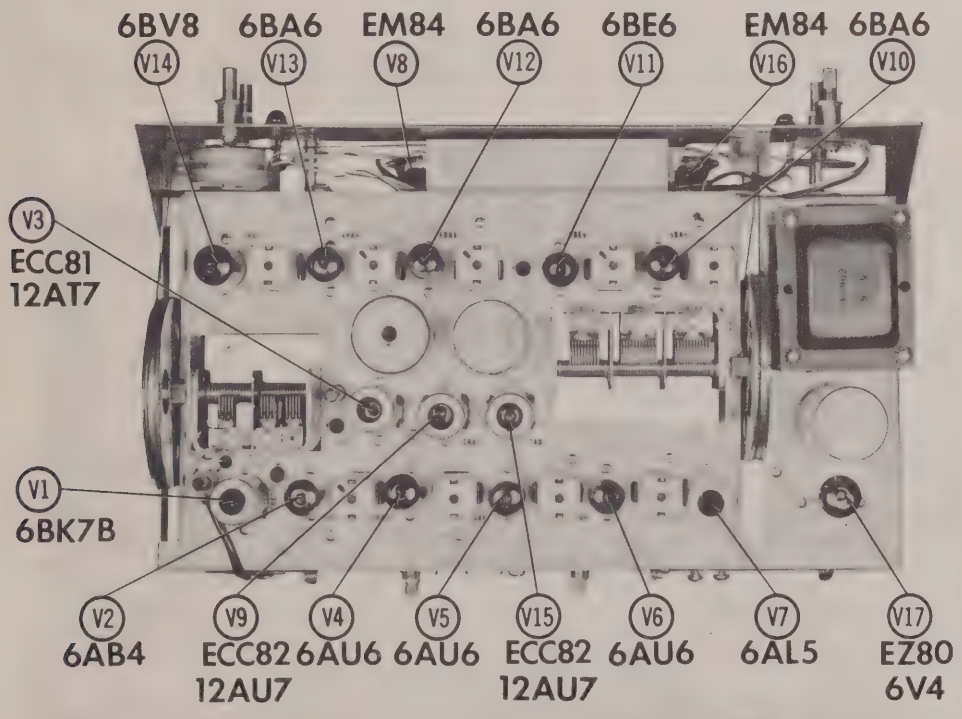
Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

PHOTOFACT* Folder

AMPEX
MODEL 502



TRADE NAME	Ampex Model 502			
MANUFACTURER	Ampex Audio, Inc., 1020 Kifer Road, Sunnyvale, California			
TYPE SET	AC Operated 17 Tube FM-AM Tuner			
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles	RATING	66 Watts, .64 Amp. @117 Volts AC	
TUNING RANGE — BROADCAST	535-1620KC	FREQ. MOD.	88 — 108MC	



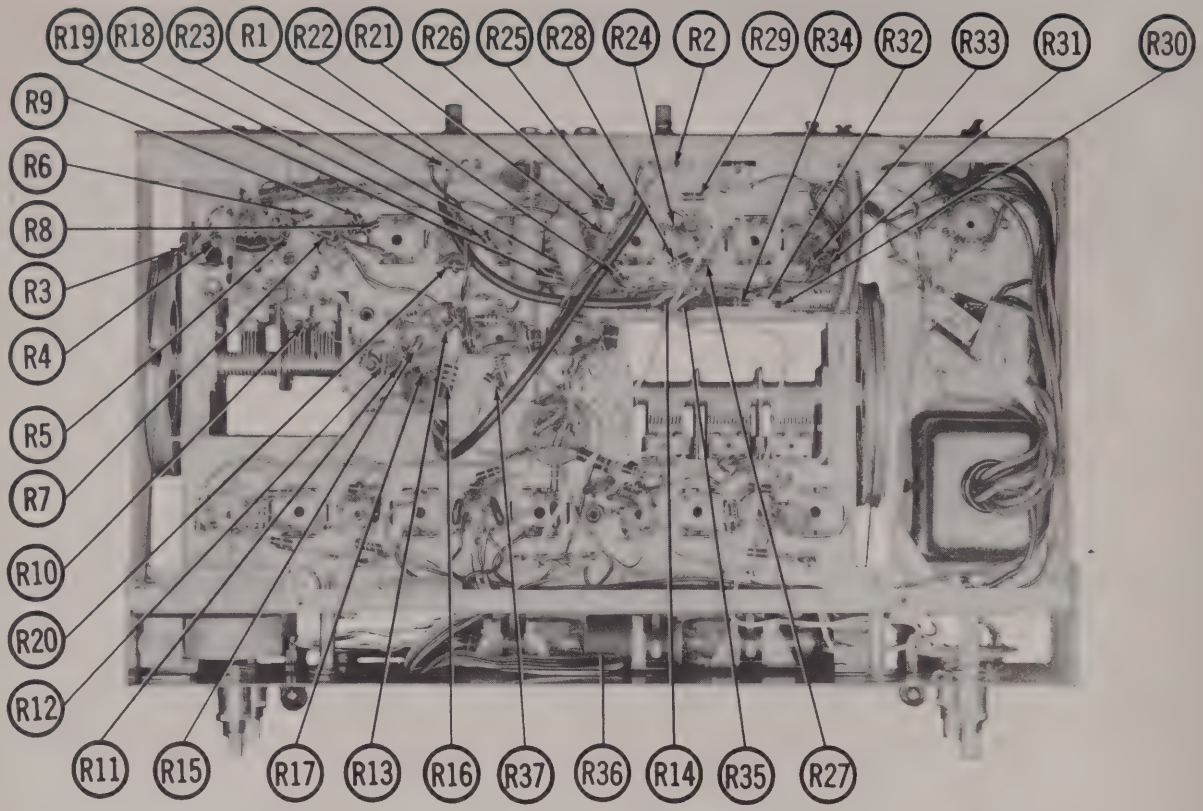
AMPEX
MODEL 502

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

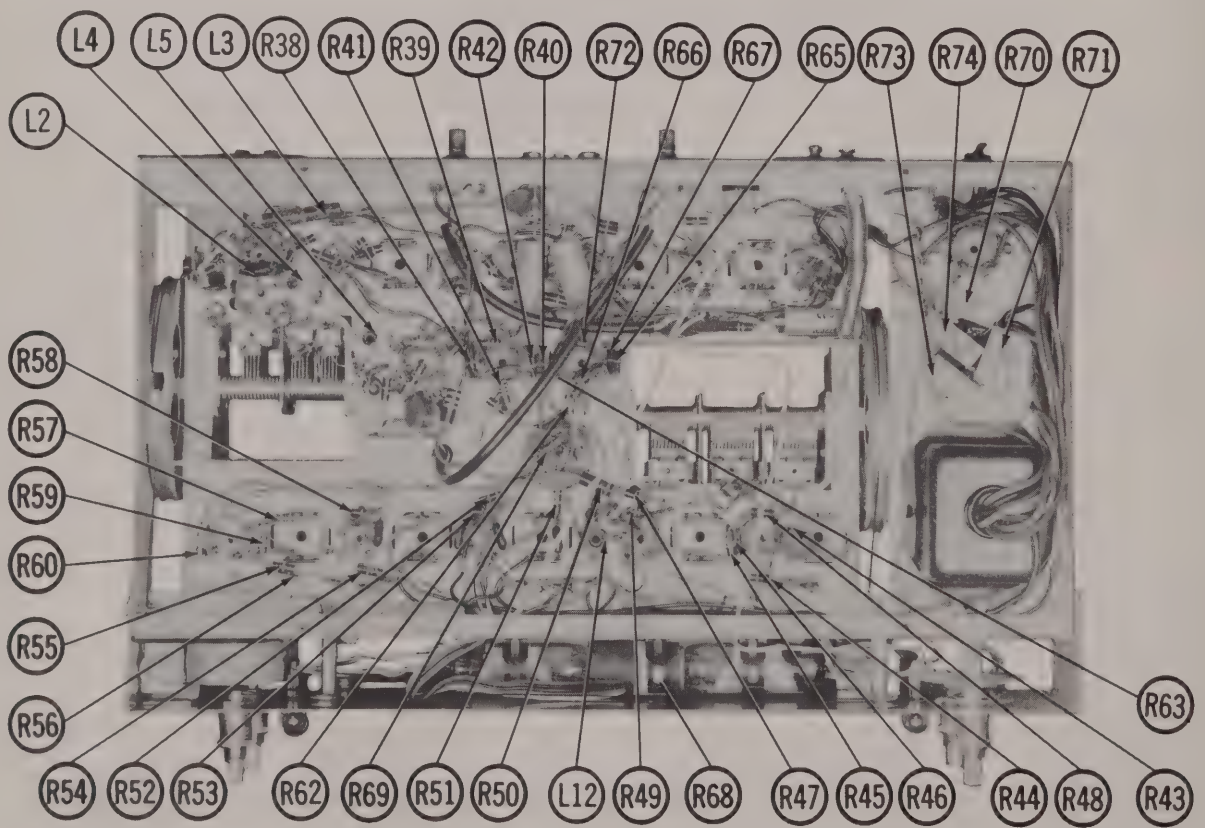
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JL226

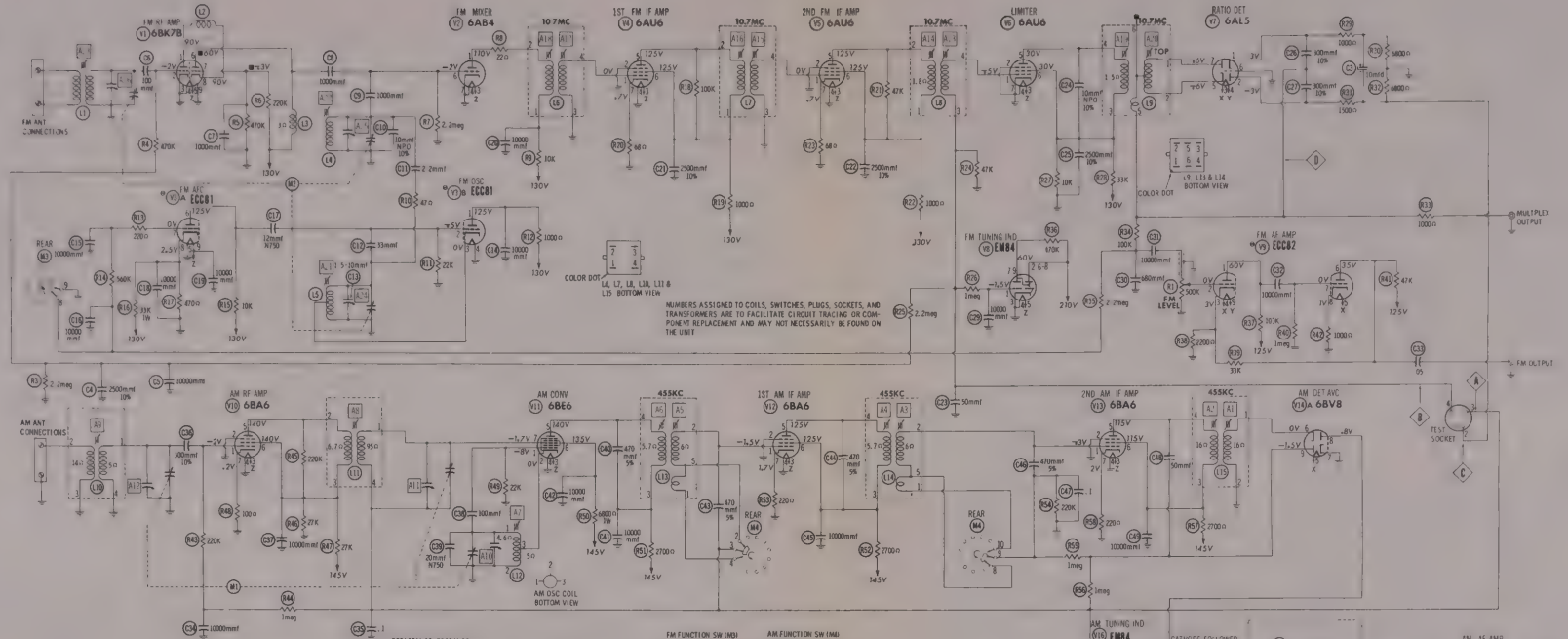
SET 457 FOLDER 3



CHASSIS BOTTOM VIEW – RESISTOR IDENT. (R1-R37)



CHASSIS BOTTOM VIEW – INDUCTOR & RESISTOR IDENT. (R38-R74)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BK7B	INF	1.7meg	0Ω	0Ω	1Ω	*1600Ω	170K	INF	0Ω
V2	6AB4	*11K	NC	.1Ω	0Ω	NC	2.2meg	0Ω		
V3	ECC81 12AT7	*2600Ω	22K	0Ω	0Ω	0Ω	*11K	▲ INF 600K	470Ω	1Ω
V4	6AU6	.5Ω	0Ω	1Ω	0Ω	*2600Ω	*2600Ω	68Ω		
V5	6AU6	5Ω	0Ω	.1Ω	0Ω	*2600Ω	*2600Ω	68Ω		
V6	6AU6	47K	0Ω	.1Ω	0Ω	*15K	*15K	0Ω		
V7	6AL5	7800Ω	8300Ω	.1Ω	1Ω	INF	0Ω	INF		
V8	EM84	1meg	*0Ω	0Ω	0Ω	1Ω	*0Ω	*470K	*0Ω	*470K
V9	ECC82 12AU7	*100K	0Ω	2200Ω	1Ω	1Ω	*25K	1meg	2000Ω	.1Ω
V10	6BA6	3.3meg	0Ω	.1Ω	0Ω	*18K	*18K	100Ω		
V11	6BE6	22K	5Ω	.1Ω	0Ω	*4700Ω	*8800Ω	2.2meg		
V12	6BA6	2.2meg	0Ω	.1Ω	0Ω	*4700Ω	*4700Ω	220Ω		
V13	6BA6	220K	0Ω	.1Ω	0Ω	*4700Ω	*4700Ω	220Ω		
V14	6BV8	15K	220K	*2000Ω	.1Ω	.1Ω	1MΩ	0Ω	220K	1.2meg
V15	ECC82 12AU7	100K	0Ω	2200Ω	.1Ω	.1Ω	*25K	1meg	1000Ω	.1Ω
V16	EM84	2.2meg	*0Ω	0Ω	0Ω	1Ω	*0Ω	*470K	*0Ω	*470K
V17	EZ80 6V4	67Ω	NC	¶	0Ω	.1Ω	NC	72Ω	NC	NC

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings
6. Volume control at maximum, no signal applied for voltage measurements

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
■ MEASURED FROM PIN 8 OF V1
▲ MEASURED IN "FM-AFC" POSITION

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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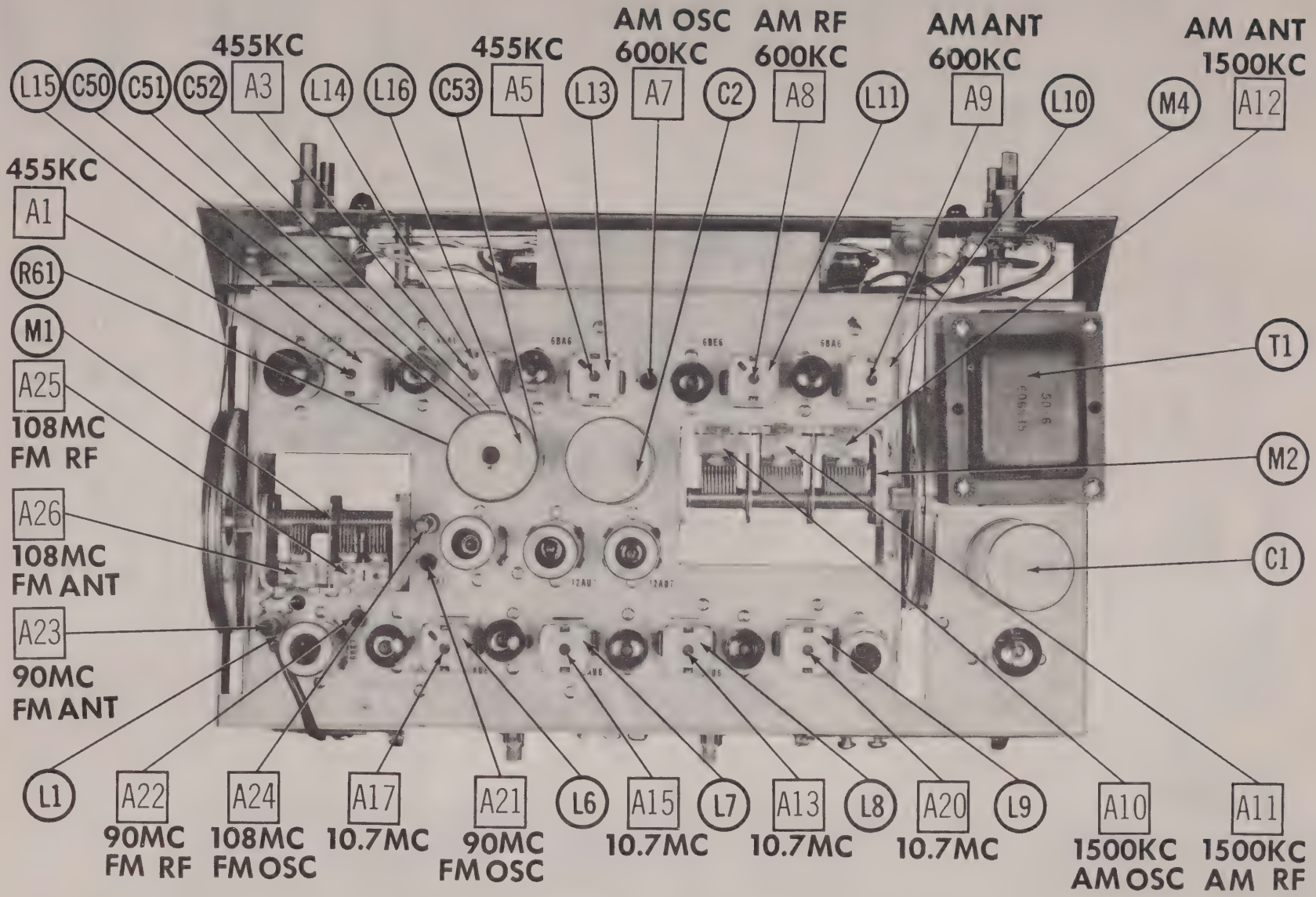
AMPEX MODEL 502



CHASSIS – TOP VIEW

MODEL 502

AMPEX

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Level control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools:
A1 thru A8, A13 thru A20.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A9, A21, A22, A23.....GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A10, A11, A12, A24, A25, A26. GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (Unmod.)	AM Sharp	Tuning gang fully open	DC probe to point Ⓐ. Common to chassis.	A1, A2, A3, A4, A5, A6	Adjust for maximum output.
2.	200mmf	High side to AM antenna terminal. Low side to chassis.	600KC	"	600KC	"	A7, A8, A9	"
3.	"	"	1500KC	"	1500KC	"	A10, A11, A12	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
4.		High side to RF stator lug (center section) of FM tuning gang. Low side to chassis.	10.7MC (Unmod.)	FM AFC Off	Tuning gang fully open	DC probe to point Ⓑ. Common to chassis.	A13, A14, A15, A16, A17, A18	Adjust for maximum deflection.
5.		"	"	"	"	DC probe to point Ⓒ. Common to chassis.	A19	Adjust for maximum deflection. Repeat in 30 seconds.
6.		"	"	"	"	DC probe to point Ⓓ. Common to chassis.	A20	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
4.		High side to RF stator lug (center section) of FM tuning gang. Low side to chassis.	10.7MC (450KC Swp.)	FM AFC Off	Tuning gang fully open	Vert. amp. to point Ⓒ. Low side to chassis.	A13, A14, A15, A16, A17, A18, A19	Disconnect stabilizing capacitor C3. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
5.		"	"	"	"	Vert. amp. to point Ⓓ. Low side to chassis.	A20	Reconnect C3. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A19 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	90MC (Unmod.)	FM AFC Off	90MC	DC probe to point Ⓑ. Common to chassis.	A21, A22 A23	Adjust for maximum deflection.
8.	"	"	108MC	"	108MC	"	A24, A25 A26	"

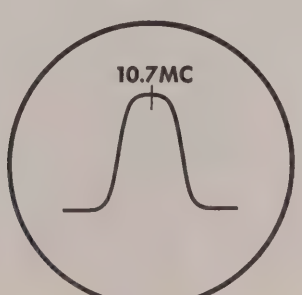


FIG. 1

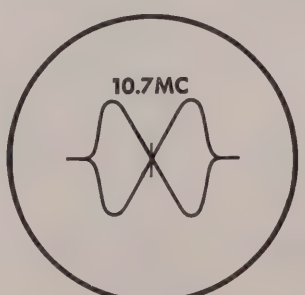
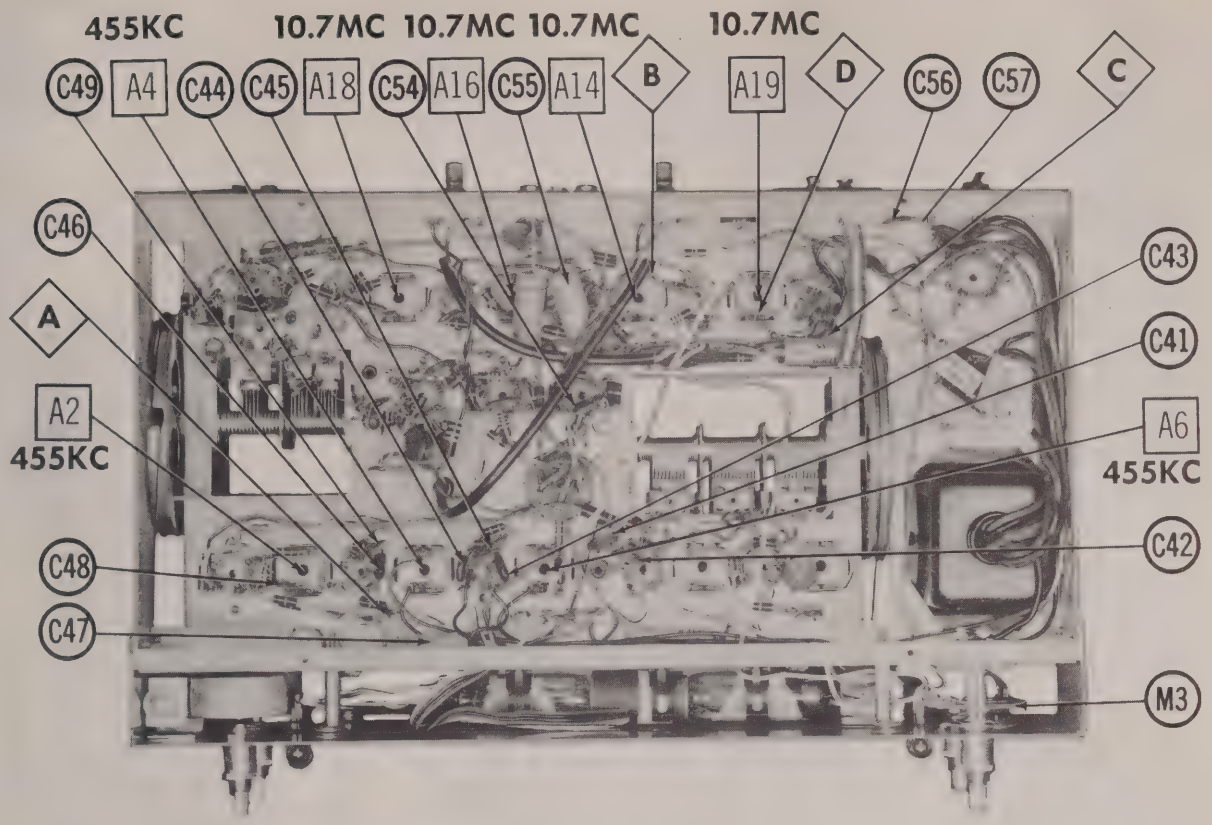
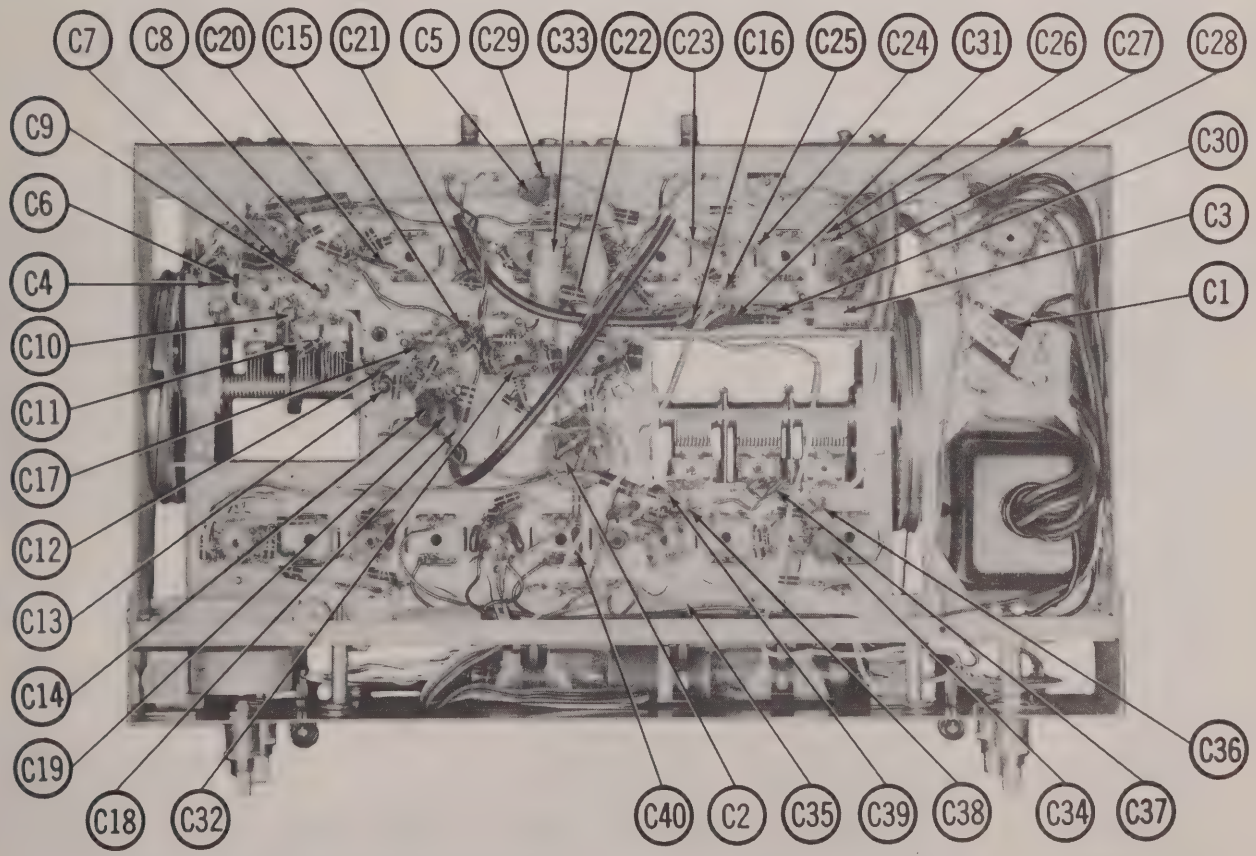


FIG. 2

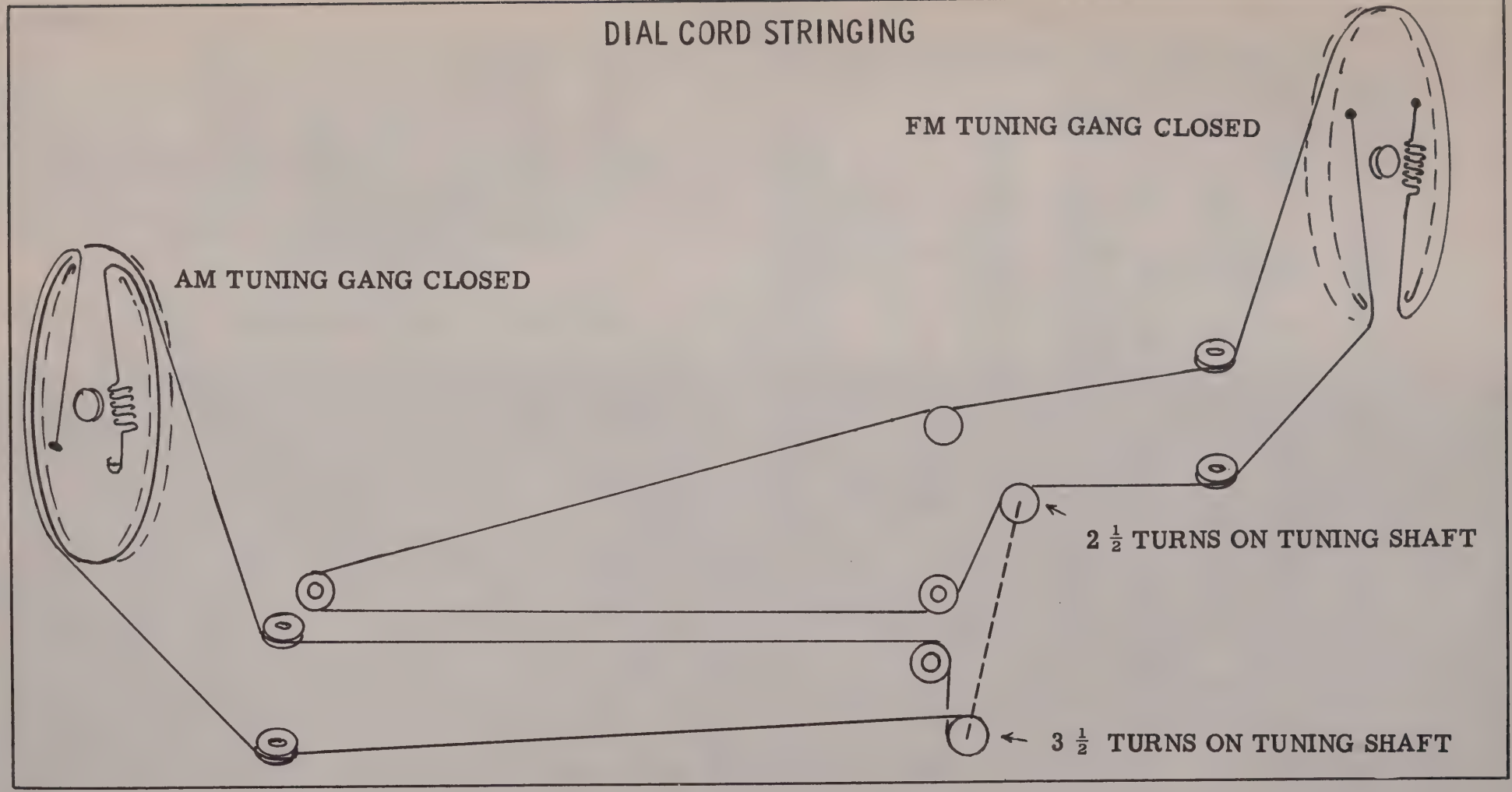


CHASSIS BOTTOM VIEW ALIGNMENT, MISC. & CAPACITOR IDENT.



CHASSIS BOTTOM VIEW — CAPACITOR IDENT. (C1-C40)

DIAL CORD STRINGING



PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE
V1	FM RF Amplifier	6BK7B
V2	FM Mixer	6AB4
V3	FM Osc. -FM AFC	ECC81/12AT7
V4	1st FM IF Amplifier	6AU6
V5	2nd FM IF Amplifier	6AU6
V6	FM Limiter	6AU6
V7	Ratio Detector	6AL5
V8	FM Tuning Indicator	EM84
V9	FM AF Amplifier	ECC82/12AU7

ITEM No.	USE	TYPE
V10	AM RF Amplifier	6BA6
V11	AM Converter	6BE6
V12	1st AM IF Amplifier	6BA6
V13	2nd AM IF Amplifier	6BA6
V14	AM Det. -AVC- Cath. Follower	6BV8
V15	AM AF Amplifier	ECC82/12AU7
V16	AM Tuning Indicator	EM84
V17	Rectifier	EZ80/6V4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	AMPEX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1 A	▲30	300	14-25	AFH3-39	C0300	FP376.7	TMT-35	TVL-3782	
B	■30	300							
C	▲30	300							
C2 A	▲40	250	14-24	AFH4-91-50	D0020	FP433.2	TMQ-3	TVL-4758	
B	■40	250							
C	▲10	250							
D	10	250							
C3	10	50	13-106	PRS50V10	BBR10-50	TC32	TD-10-50	TVA-1304	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	AMPEX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C4	2500		10%	10-252-1	DI-2500		1R5D25	GEM-16225	6TM-D25	
C5	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	100			10-101-2	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C7	1000			10-102-2	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C8	1000			10-102-2	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C9	1000			10-102-2	BPD-001	DD-102	BYA10D1M	B-210	5HK-D1	
C10	10		NPO 10%	10-100-NPO	NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C11	2.2			10-2.2	NPO-SI 2.2	TCZ-2R2	C10V22C	CNO-522	5TCC-V22S 10%*	
C12	33			10-330-2	BPD-000033	DD-330	L10Q33	UC-5433	5GA-Q33	

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	AMPEX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C13	1.5-10			15-5		829-10				
C14	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C15	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C16	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	12		N750	10-120-2N-750		TCN-12	C10Q12U	CN7-412	5TCU-Q12S *	
C18	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C19	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C21	2500		10%	10-252-1	DI-2500		1R5D25	MCB460	5GA-D25S 10%*	
C22	2500		10%	10-252-1	DI-2500		1R5D25	MCB460	5GA-D25S 10%*	
C23	50			10-500-2	BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C24	10		NPO 10%	10-100-NPO	NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C25	2500		10%	10-252-1	DI-2500		1R5D25	MCB460	5GA-D25S 10%*	
C26	300		10%	10-301-1	DI-300	MD-301	L10T3		5GA-T3S 10%*	
C27	300		10%	10-301-1	DI-300	MD-301	L10T3		5GA-T3S 10%*	
C28	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C29	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C30	680			10-681-2	BPD-00068	DD-681	BYA10T68	B-368	5GA-T68	
C31	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C32	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C33	.05	400		13-503-2	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C34	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C35	.1	200		13-104-1	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C36	300		10%	10-301-1	DI-300	MD-301	L10T3		5GA-T3S 10%*	
C37	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C38	100			10-101-2	BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C39	20		N750	10-200-2N-750	N750-DI 20	DTN-20	C10Q2U		5TCU-Q2	
C40	470		5%	11-471	1469-00047		22R5T47		MS-347	
C41	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C42	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C43	470		5%	11-471	1469-00047		22R5T47		MS-347	
C44	470		5%	11-471	1469-00047		22R5T47		MS-347	
C45	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C46	470		5%	11-471	1469-00047		22R5T47		MS-347	
C47	.1	200		13-104-1	P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C48	50			10-500-2	BPD-00005	DD-500	L10Q5	UC-545	5GA-Q5	
C49	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C50	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C51	.008	100	10%	13-802-1				GEM-1628	5BF-D82	
C52	.008	100	10%	13-802-1				GEM-1628	5BF-D82	
C53	2500		10%	10-252-1	DI-2500		1R5D25	MCB460	5GA-D25S 10%*	
C54	10000			10-103	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C55	.05	400		13-503-2	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	
C56	5000	900		10-502-UL	DAC-9	DD-502	BYA10D5	B-250	5GA-D5	
C57	5000	900		10-502-UL	DAC-9	DD-502	BYA10D5	B-250	5GA-D5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

PARTS LIST & DESCRIPTION (continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	AMPEX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	28-506A	AB-60	A47-500K-Z	B13-133	U48	FM Level
B	Shaft			AK-1	FKS-1	SK2	Not Req.	
R2A	500K	½	28-506A	AB-60	A47-500K-Z	B13-133	U48	AM Level
B	Shaft			AK-1	FKS-1	SK2	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		AMPEX PART No.	NOTES
	OHMS	WATT		
R3	2.2meg		20-225	
R4	470K		20-474	
R5	470K		20-474	
R6	220K		20-224	
R7	2.2meg		20-225	
R8	22Ω		20-220	
R9	10K		20-103	
R10	47Ω		20-470	
R11	22K		20-223	
R12	1000Ω		20-102	
R13	220Ω		20-221	
R14	560K		20-564	
R15	10K		20-103	
R16	33K	1		
R17	470Ω		20-471	
R18	100K		20-104	
R19	1000Ω		20-102	
R20	68Ω		20-680	
R21	47K		20-473	
R22	1000Ω		20-102	
R23	68Ω		20-680	
R24	47K		20-473	
R25	2.2meg		20-225	
R26	1meg		20-105	
R27	10K		20-103	
R28	33K		20-333	
R29	1000Ω		20-102	
R30	6800Ω		20-682	
R31	1500Ω		20-152	
R32	6800Ω		20-682	
R33	1000Ω		20-103	
R34	100K		20-104	
R35	2.2meg		20-225	
R36	470K		20-474	
R37	100K		20-104	
R38	2200Ω		20-222	

ITEM No.	RATING		AMPEX PART No.	NOTES
	OHMS	WATT		
R39	33K		20-333	
R40	1meg		20-105	
R41	47K		20-473	
R42	1000Ω		20-102	
R43	220K		20-224	
R44	1meg		20-105	
R45	220K		20-224	
R46	27K		20-273	
R47	27K		20-273	
R48	100Ω		20-101	
R49	22K		20-223	
R50	6800Ω	1		
R51	2700Ω		20-272	
R52	2700Ω		20-272	
R53	220Ω		20-221	
R54	220K		20-224	
R55	1meg		20-105	
R56	1meg		20-105	
R57	2700Ω		20-272	
R58	220Ω		20-221	
R59	220K		20-224	
R60	15K		20-153	
R61	5000Ω		20-502	
R62	100K		20-104	
R63	2200Ω		20-222	
R64	33K		20-333	
R65	1meg		20-105	
R66	47K		20-473	
R67	1000Ω		20-102	
R68	470K		20-474	
R69	2200Ω		20-222	
R70	800Ω	5		
R71	800Ω	5		
R72	2200Ω		20-222	
R73	1000Ω	5		
R74	1000Ω	5		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AMPEX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Trans.							
L2	RF Choke		19-1000	19-1000	BC-561	4602		
L3	RF Choke		19-1008	19-1008	SW-631	4609		5.6uh①
L4	FM RF Coil							
L5	FM Osc. Coil							
L6	1st FM IF Trans.	53-1	16-3487	16-3487	FM-254	1463		
L7	2nd FM IF Trans.	53-2	16-3487	16-3487	FM-254	1463		
L8	3rd FM IF Trans.	53-5	16-3487	16-3487	FM-254	1463		

COILS (cont)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		AMPEX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L9	Ratio Detector	53-3	17-3498	17-3498	FM-255	1465		
L10	AM Ant. Trans.	53-8						
L11	AM RF Trans.	53-7						
L12	AM Osc. Coil	54-3						
L13	1st AM IF Trans.	53-6						
L14	2nd AM IF Trans.	53-6						
L15	3rd AM IF Trans.	53-4	16-6758	16-6758	BC-353	12-C2	RF-2	
L16	10KC Filter Coil	55-7						

① IRC Part #CLA

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	AMPEX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .64A	400 VCT @.080A	6.3 VCT @1.2A	50-6						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V@ 4.7A									

MISCELLANEOUS

ITEM No.	PART NAME	AMPEX PART No.	NOTES
M1	Tuning Cap.	15-201	AM, 2 Gang (Ant. 9-353mmf, RF 8-348mmf, Osc. 8-164mmf)
M2	Tuning Cap.	15-101	FM, 3 Gang With Shield
M3	Switch	8-17	Off-FM-FM AFC
M4	Switch	8-16	AM Sharp-AM Broad

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	10-0018-1	Off-On FM, AM Sharp-AM Broad, With Pointer
Knob	10-0018-2	AM FM Tuning
Dial Glass	10-0041	
Cabinet	871	Walnut
Cabinet	870	Unfinished

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

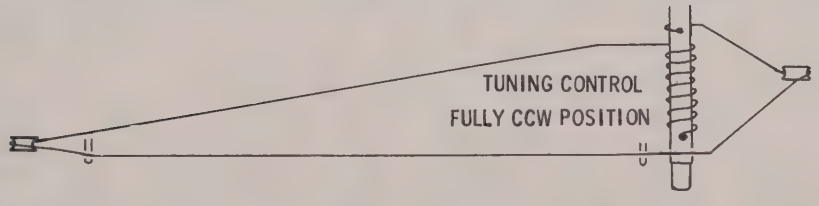
BLONDER-TONGUE
MODEL R-98

BLONDER-TONGUE
MODEL R-98

BLONDER-TONGUE
MODEL R-98

TRADE NAME	Blonder-Tongue Model R-98		
MANUFACTURER	Blonder-Tongue Laboratories, Inc., 9 Alling Street, Newark 2, N.J.		
TYPE SET	AC-DC Operated 6 Tube FM-AM Receiver		
POWER SUPPLY	110-120 Volts AC-DC	RATING	32 Watts, .375 Amp. @ 117 Volts AC
TUNING RANGE-BROADCAST	535-1620KC	FREQ. MOD.	88-108MC

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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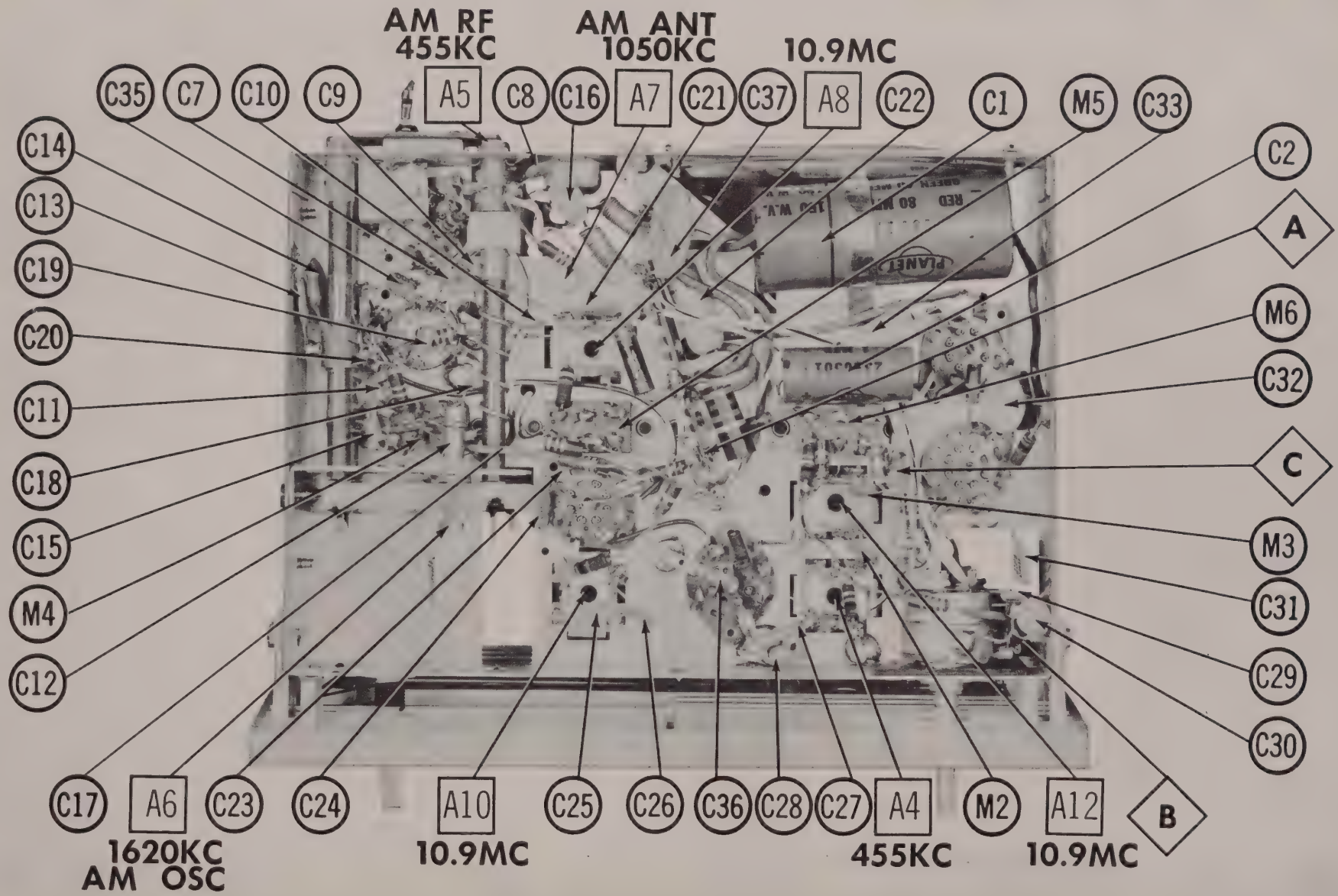
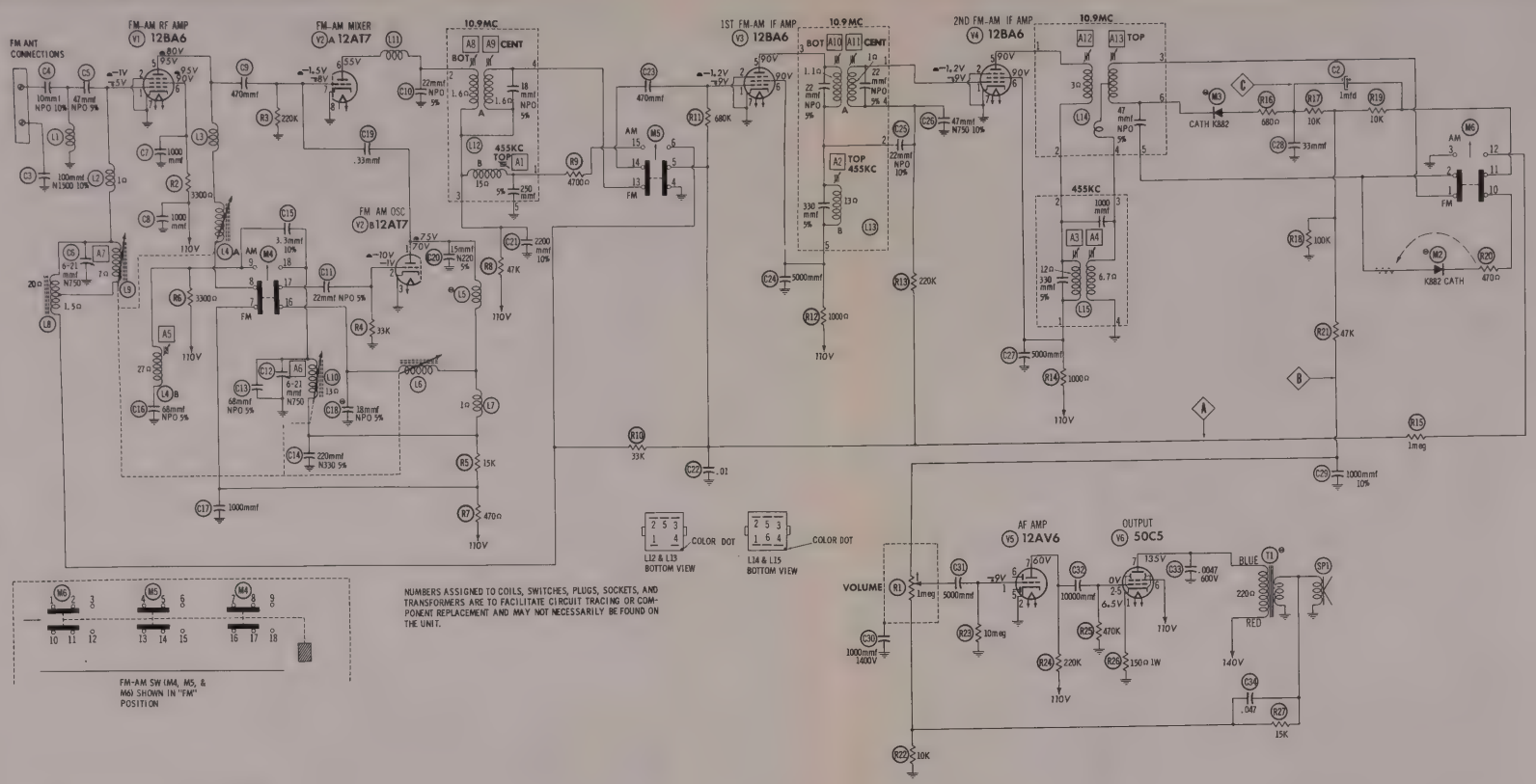
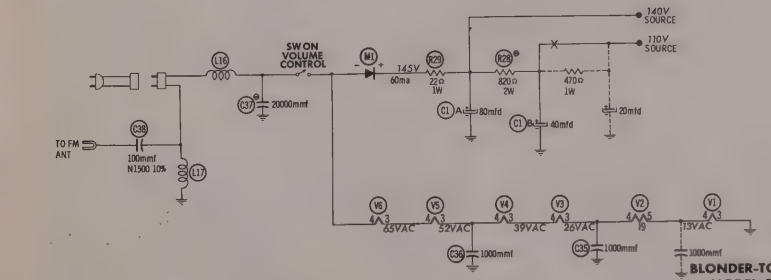


CHASSIS BOTTOM VIEW — ALIGNMENT, CAPACITOR & MISC. IDENT.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12BA6	33K ▪ 1meg	0Ω	0Ω	12Ω	†1300Ω ▪ †4100Ω	†4100Ω	0Ω		
V2	12AT7	†15K	33K	0Ω	24Ω	12Ω	†48K	220K	0Ω	18Ω
V3	12BA6	680K ▪ 1.7meg	0Ω	24Ω	36Ω	†1800Ω	†1800Ω	0Ω		
V4	12BA6	220K ▪ 1.2meg	0Ω	36Ω	48Ω	†1800Ω	†1800Ω	0Ω		
V5	12AV6	10meg	0Ω	48Ω	60Ω	NC	NC	†220K		
V6	50C5	150Ω	470K	60Ω	110Ω	470K	†840Ω	†250Ω		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
† MEASURED FROM OUTPUT OF M1.
▪ MEASURED IN "AM" POSITION.
NC NO CONNECTION.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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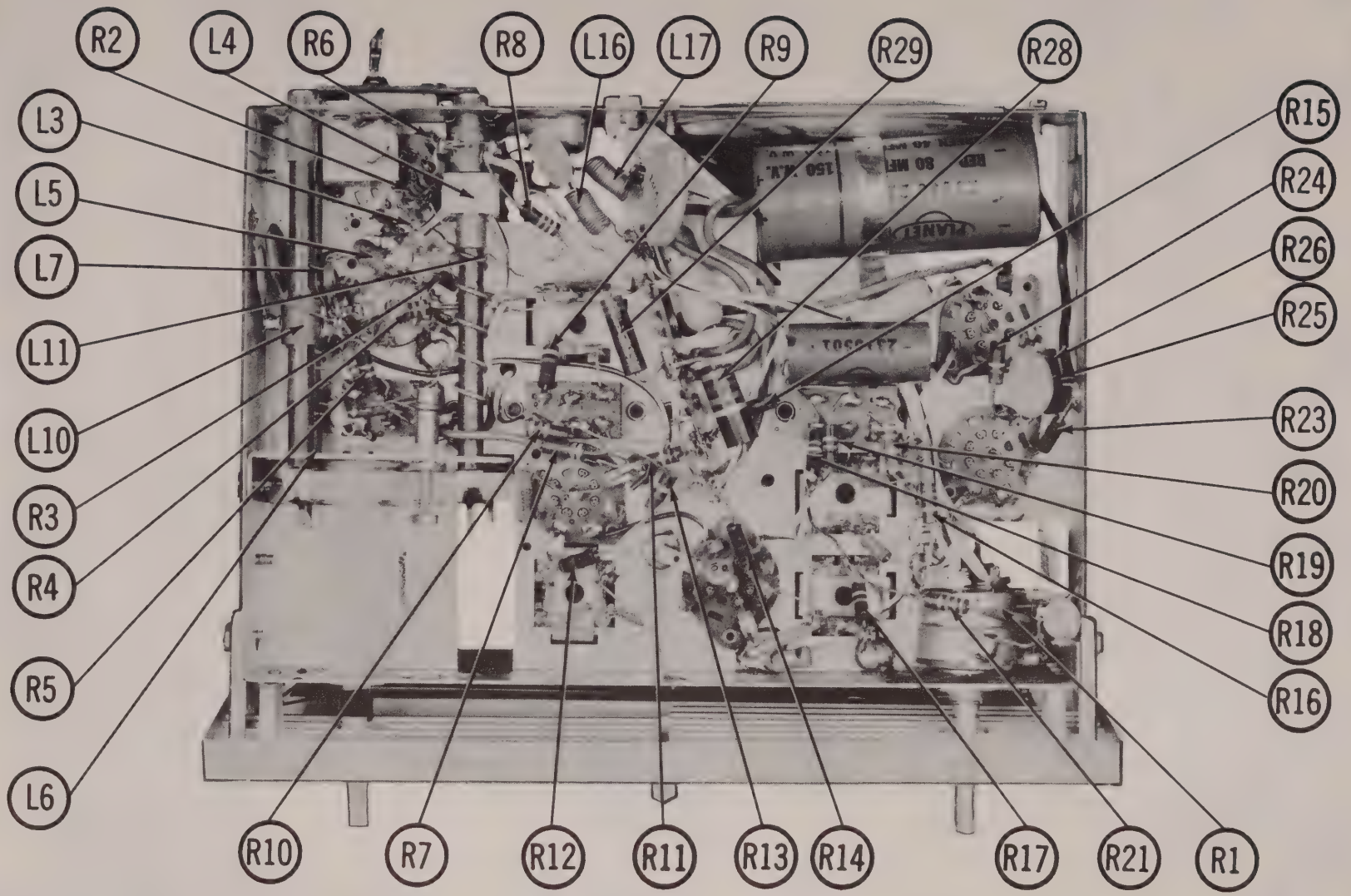
BLONDER-TONGUE MODEL R-98



CHASSIS BOTTOM VIEW — RESISTOR & INDUCTOR IDENT.

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

Connect the negative lead of a 4.5 volt bias supply to point Ⓐ. Positive to chassis.
Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested Alignment Tools: A1 thru A4, A8 thru A13 .... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A14, A15 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.05mfd	High side to pin 7 (grid) of Mixer. Low side to chassis.	455KC (400∿ 30% AM)	AM	1600KC	AC probe to point Ⓑ. Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	"	"	"	"	"	"	A5	Adjust for MINIMUM deflection.
3.		Loop	1620KC	"	1620KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum deflection.
4.		"	1050KC		1050KC Signal	"	A7	Adjust for maximum deflection. Set dial pointer at 1050KC.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
5.	.005mfd	High side to pin 7 (grid) of Mixer. Low side to chassis.	10.9MC (Unmod)	FM	108MC	DC probe to point Ⓒ. Common to chassis.	A8, A9, A10, A11, A12	Adjust for maximum deflection.
6.	"	"	"	"	"	DC probe to point Ⓑ. Common to chassis.	A13	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60∿ modulation and 450KC sweep. Use 120∿ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
5.	.005mfd	High side to pin 7 (grid) of Mixer. Low side to chassis.	10.9MC (450KC Swp)	FM	108MC	Vert. Amp. to point Ⓒ. Low side to chassis.	A8, A9, A10, A11, A12	Disconnect stabilizing capacitor (C2). Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
6.	"	"	"	"	"	Vert. Amp. to point Ⓑ. Low side to chassis.	A13	Reconnect C2. Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A12 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Direct	Across FM antenna terminals.	98MC (Unmod)	FM	98MC	DC probe to point Ⓒ. Common to chassis.	L6, L3, L1	Adjust for maximum deflection by compressing or expanding coil turns.

FIG. 1

FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM-AM RF Amp.	12BA6	
V2	FM-AM Mixer- FM AM Osc.	12AT7	
V3	1st FM-AM IF Amp.	12BA6	
V4	2nd FM-AM IF Amp.	12BA6	
V5	AF Amplifier	12AV6	
V6	Output	50C5	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA							NOTES
	CAP.	VOLT.	Blonder-Tongue PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.		
C1A	80	150		PRS150V80-40	BBRD8415	TCD4975	TDLD-11	TVA-2462		
B	40	150								
C2	1	50		PRS450V1	BBR1-50	TC31	TD-1-50	TVA-1300		

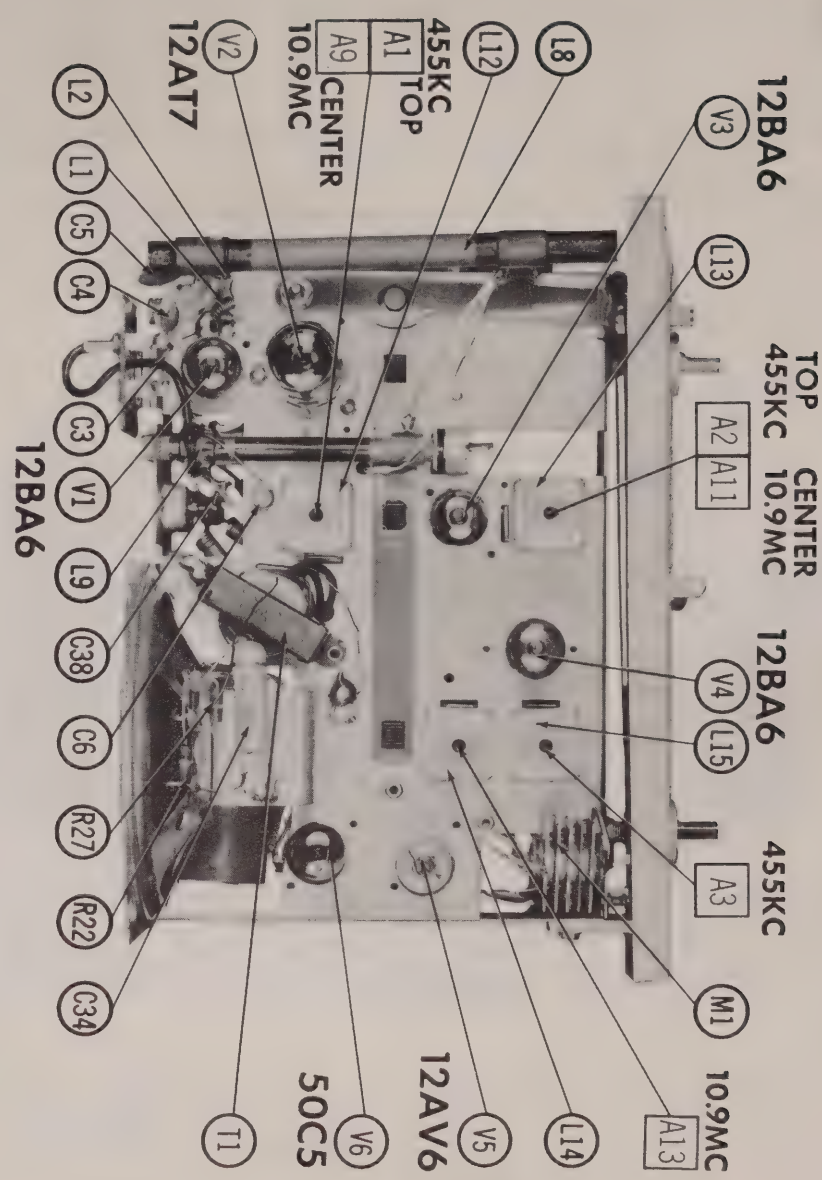
FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA							NOTES
	CAP.	VOLT	TOL	Blonder-Tongue PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C3	100		N1500 10%			TCL-100					
C4	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10% *		
C5	47		NPO 5%			DTZ-47	C10Q47C	CNO-447	5TCC-Q47S 5% *		
C6	6-21		N750								
C7	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C8	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C9	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47		
C10	22		NPO 5%			DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 5% *		
C11	22		NPO 5%			DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 5% *		
C12	6-21		N750								
C13	68		NPO 5%			DTZ-68	C10Q68C	CNO-468	5TCC-Q68S 5% *		
C14	220		N330 5%								
C15	3.3		10%		NPO-SI 3.3	TCZ-3R3	L10V33	ZT-5533	5TCCB-V33S 10% *		
C16	68		NPO 5%			DTZ-68	C10Q68C	CNO-468	5TCC-Q68S 5% *		
C17	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C18	18		NPO 5%			DTZ-18	C10Q18C	CNO-418	5TCC-Q18S 5% *		①
C19	.33										
C20	15		N220 5%								
C21	2200		10%		DI-2200			JL-222	5GA-D22S 10% *		
C22	.01	200			P288N-01	D6-103	CUB4S1	GEM-411	4TM-S1		
C23	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47		
C24	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5		
C25	22		NPO 10%		NPO-DI 22	DTZ-22	C10Q22C	CNO-422	5TCC-Q22S 10% *		
C26	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10% *		
C27	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5		
C28	33				SI 33	D6-330	L10Q33	UC-5433	5GA-Q33		
C29	1000		10%		DI-1000			JL-210	6TM-D1		
C30	1000	1400			HVD-15-1000	DD30-102	HVB20D1	2HV-210	20GA-D1		
C31	5000				BPD-005	DD-502	BYA10D5	B-250	5HK-D5		
C32	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C33	.0047	600			P688N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47		
C34	.047	200			P288N-047	DF-503	CUB2S47	GEM-4147	2TM-S47		
C35	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C36	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C37	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2		②
C38	100		N1500 10%			TCL-100					

① Some versions may use 15mmf NPO 5% in this application. ② Some versions may use 5000mmf in this application

CHASSIS—TOP VIEW



PARTS LIST & DESCRIPTION (continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Blonder-Tongue PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	1meg	½	1410506	B-69	A47-1meg-S	Q11-137	U54	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			KR-1	SW-12	76-1	US-26	Off-On

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Blonder-Tongue PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	5140001	4A1	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Blonder-Tongue PART No.	NOTES
	OHMS	WATT		
R2	3300Ω			
R3	220K			
R4	33K			
R5	15K			
R6	3300Ω			
R7	470Ω			
R8	47K			
R9	4700Ω			
R10	33K			
R11	680K			
R12	1000Ω			
R13	220K			
R14	1000Ω			
R15	1meg			

ITEM No.	RATING		Blonder-Tongue PART No.	NOTES
	OHMS	WATT		
R16	680Ω			
R17	10K			
R18	100K			
R19	10K			
R20	470Ω			
R21	47K			
R22	10K			
R23	10meg			
R24	220K			
R25	470K			
R26	150Ω	1		
R27	15K			
R28	820Ω	2		Note 1
R29	22Ω	1		

Note 1. Some versions may use 680Ω, 2W in this application.

RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA					NOTES
	CURRENT (Measured)	Blonder-Tongue PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.061A		1235AH①	RS100 ①		100 ①	① Selenium Type.

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Blonder-Tongue PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	K882 *		1N60	1N60	1N295	Detector (Pigtail)
M3	K882 *		1N60	1N60	1N295	Detector (Pigtail)

* Some versions may use 1N295 in this application.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Blonder-Tongue PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	FM Ant. Coil	3340018	19-1000	19-1000	BC-561	4602		luh
L2	RF Choke	3330038	19-1003	19-1003	BC-564	4608		3.6uh
L3	RF Choke	3340005						
L4A	FM RF Coil	3500001						
B	AM RF Coil							
L5	RF Choke	3340078						①
L6	FM Osc. Coil	3330035						
L7	RF Choke	3330038	19-1003	19-1003	BC-564	4608		3.6uh
L8	Loopstick	3320004						
L9	AM Ant. Coil	3330034						
L10	AM Osc. Coil	3330036						
L11	RF Choke	3340009						
L12A	1st FM IF	3220012						
B	1st AM IF							
L13A	2nd FM IF	3220013						
B	2nd AM IF							
L14	Ratio Detector	3220015						
L15	3rd AM IF	3220016						
L16	Line Choke	3340068	19-1001	19-1001	BC-562	4604		1.4uh
L17	Line Choke	3340068	19-1001	19-1001	BC-562	4604		1.4uh

① Part #3340007 used when C18 is 15mmf NPO 5%.

MISCELLANEOUS

ITEM No.	PART NAME	Blonder-Tongue PART No.	NOTES
M4	Switch	5310016	FM-AM (DPDT, Slide Type)
M5	Switch	5310016	FM-AM (DPDT, Slide Type)
M6	Switch	5310016	FM-AM (DPDT, Slide Type)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Blonder-Tongue PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2300Ω	3-4Ω	3210006 ①	24S53	A-3025	AU-605	A-3332	24S52	S-12X	① Alternate Part #3220006.

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

COLUMBIA
MODELS 645, 650

COLUMBIA
MODELS 645, 650

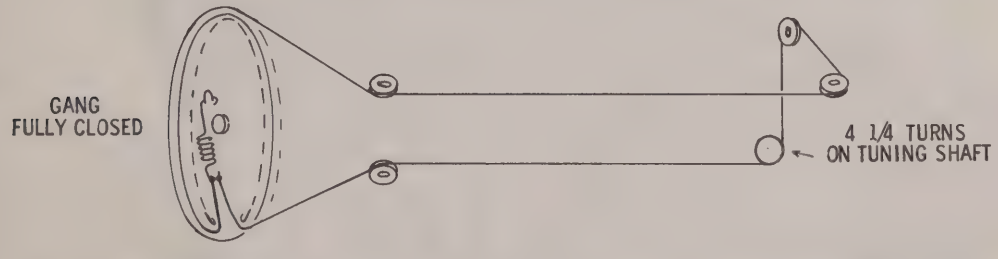
MODEL 645

COLUMBIA
MODELS 645, 650

TRADE NAME	Columbia Models 645, 650
MANUFACTURER	CBS-HYTRON, 100 Endicott Street, Danvers, Mass.
TYPE SET	AC Operated FM-AM Tuner, Preamplifier, Stereo Amplifier And 4 Speed Automatic Record Changer
TUBES	Tuner: 9 Preamplifier: 2 Amplifier: Model 645, 5; Model 650, 8
POWER SUPPLY	110-120 Volts AC-60 Cycles RATING 110 Watts, 1.05 Amp. @117 Volts AC
TUNING RANGE—BROADCAST	535-1620KC FREQ. MOD. 88-108MC

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE SIMILAR GLASERS-STEERS GS-77—PHOTOFACT SET 399 FOLDER 7

DIAL CORD STRINGING



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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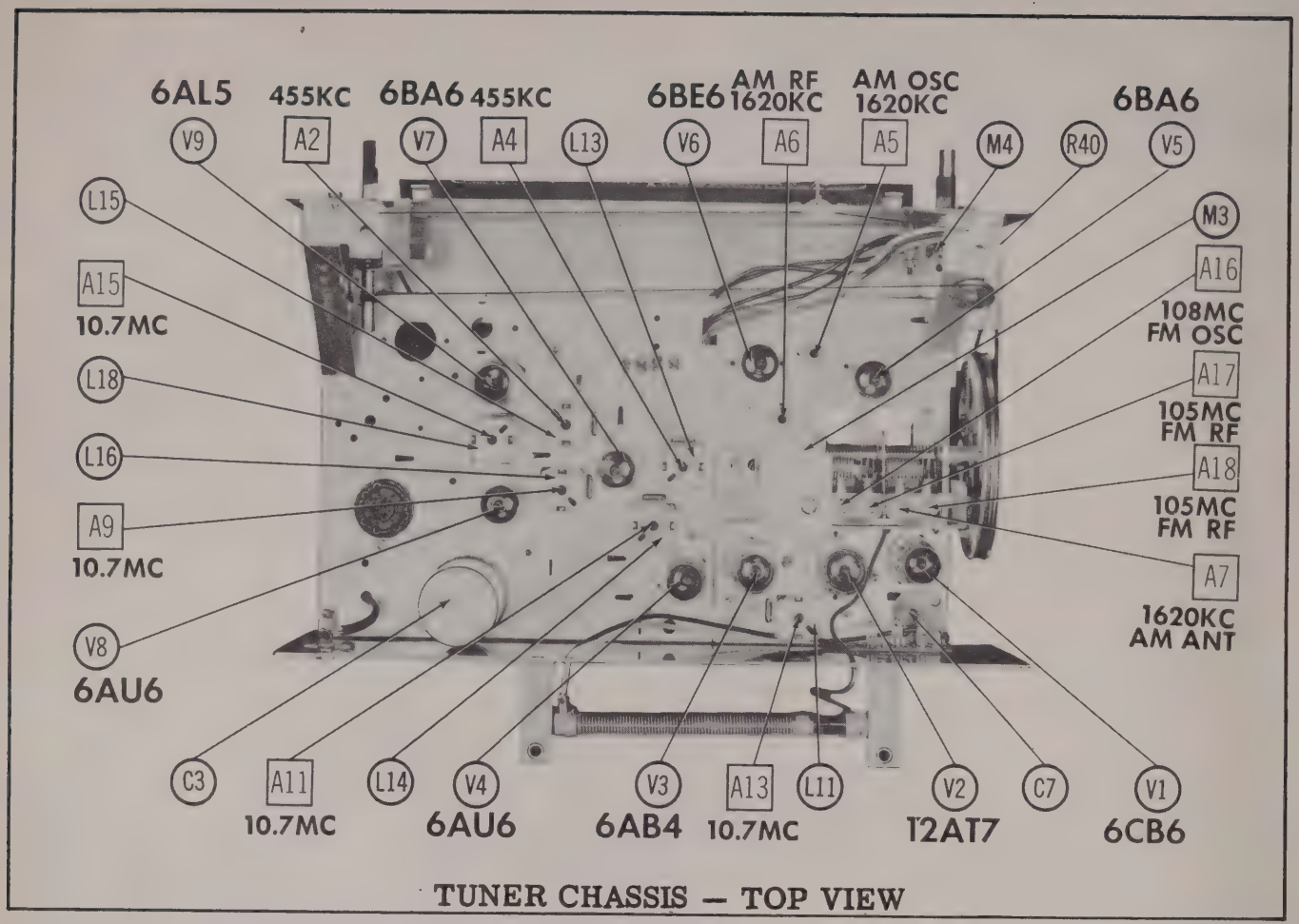
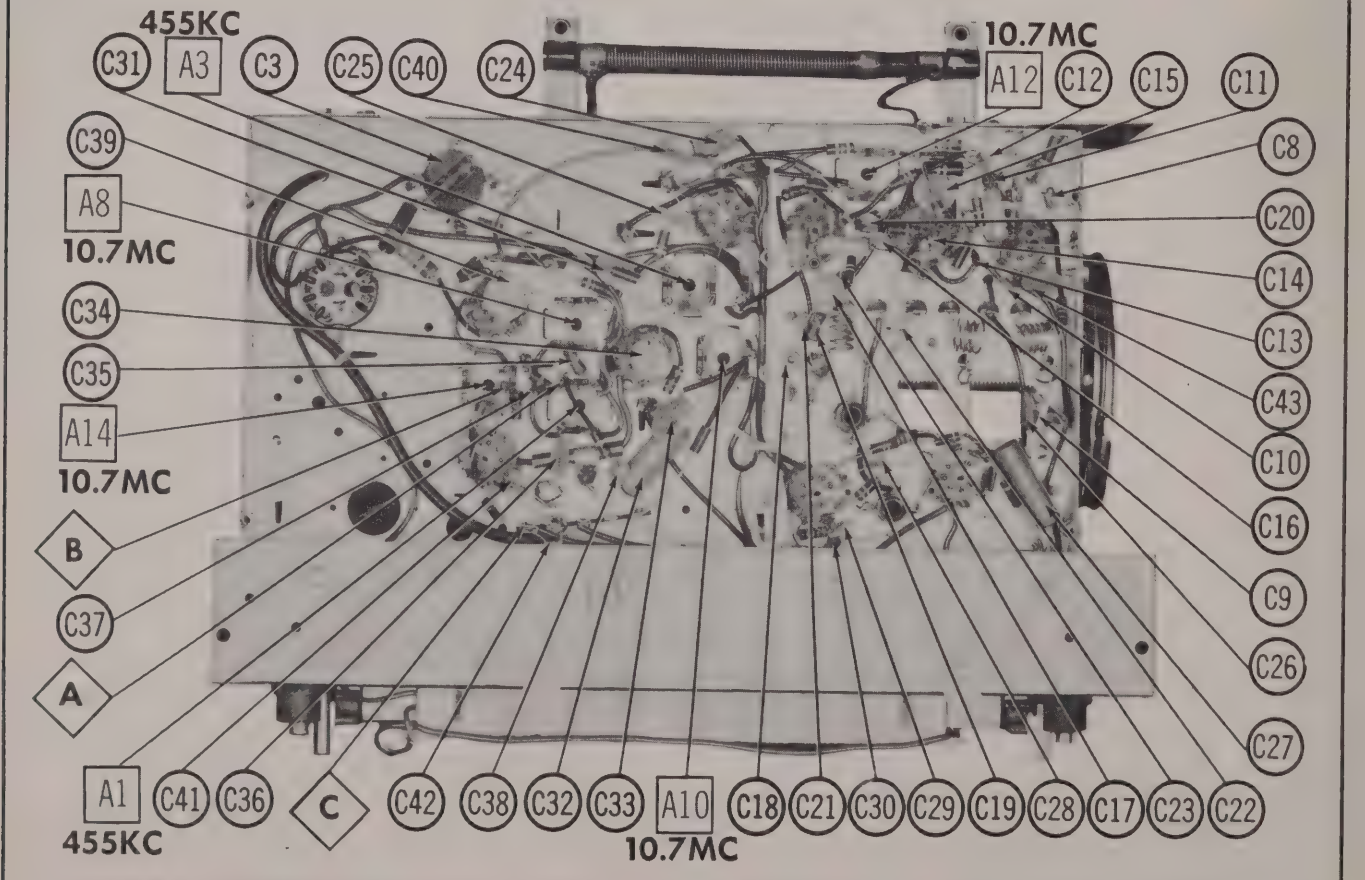


TUNER CHASSIS — TOP VIEW



TUNER CHASSIS BOTTOM VIEW — ALIGNMENT & CAPACITOR IDENT.

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Suggested alignment tools: A1 thru A4, A8 thru A15.....GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6, A7, A16, A17, A18..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

AM ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of AM Converter. Low side to chassis.	455KC (400~ Mod.)	AM	Tuning gang fully open	AC probe to tuner output. Common to chassis.	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	"	A5, A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
3.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (Unmod.)	FM	Tuning gang fully open	DC probe to point (A). Common to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum deflection.
4.	"	High side to pin 1 (grid) of Limiter. Low side to chassis.	"	"	"	DC probe thru 1meg to point (B). Common to chassis.	A14	"
5.	"	"	"	"	"	DC probe to point (C). Common to chassis.	A15	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
3.	.005mfd	High side to pin 2 (grid) of FM Mixer. Low side to chassis.	10.7MC (450KC Swp)	FM	Tuning gang fully open.	Vert. amp. to point (A). Low side to chassis.	A8, A9, A10, A11, A12, A13	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown.
4.	"	High side to pin 1 (grid) of Limiter. Low side to chassis.	"	"	"	Vert. amp. to point (B). Low side to chassis.	A14	"
5.	"	"	"	"	"	Vert. amp. to point (C). Low side to chassis.	A15	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A14 for maximum amplitude and straightness of crossover lines.

FM RF ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	BAND SWITCH POS.	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
6.	Two 120Ω Carbon Resistors	Across FM antenna terminals with 120Ω in each lead.	108MC (Unmod.)	FM	108MC	DC probe to point (A). Common to chassis.	A16	Adjust for maximum deflection.
7.	"	"	105MC	"	105MC	"	A17, A18	Adjust for maximum deflection while rocking tuning gang.

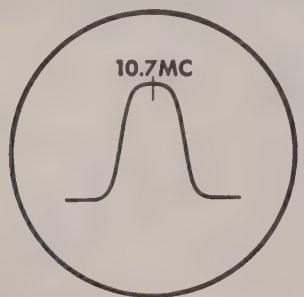


FIG. 1

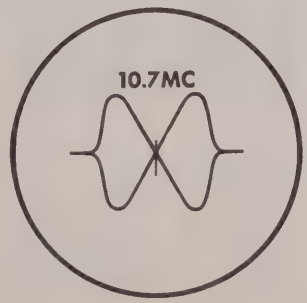


FIG. 2

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	FM RF Amplifier	6CB6	
V2	FM Mixer-FM AFC	12AT7	
V3	FM Oscillator	6AB4	
V4	1st FM IF Amplifier	6AU6	
V5	AM RF Amplifier	6BA6	
V6	AM Converter	6BE6	
V7	2nd FM-1st AM IF Amp.	6BA6	
V8	FM Limiter-AM Det. - AVC	6AU6	
V9	Discriminator	6AL5	
V10	Channel 1 AF Amp.	12AU7/ ECC82	
V11	Channel 2 AF Amp.	12AU7/ ECC82	
V12	Channel 1 AF Amp- Channel 2 AF Amp.	7025	①
V13	Channel 1 Output	EL84/6BQ5	②
V14	Channel 2 Output	EL84/6BQ5	②
V15	Rectifier	5Y3GT	
V16	Rectifier	5U4GB	

① Model 650 uses a 7025 for each channel.
② Model 650 uses 2 in parallel for each channel.

ELECTROLYTIC CAPACITORS

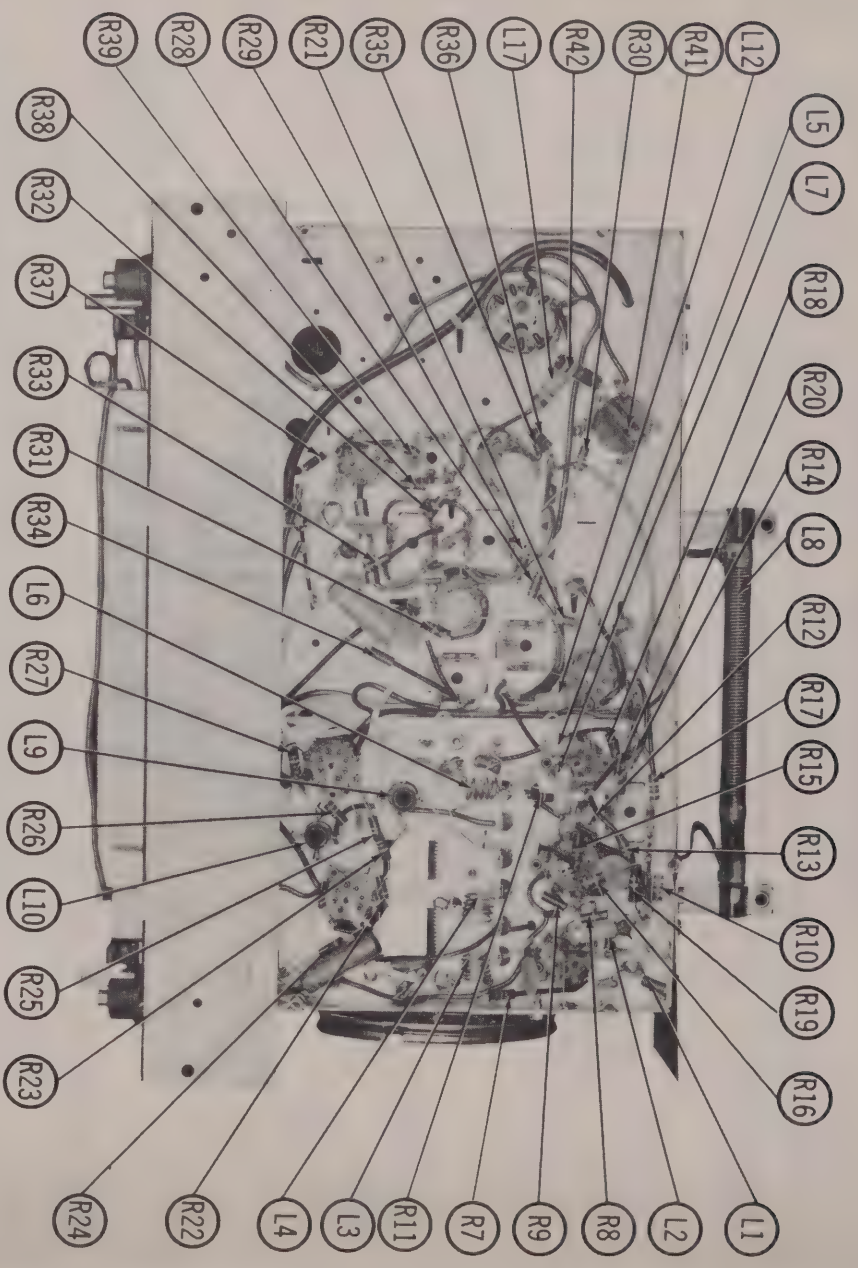
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	COLUMBIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲60	400	11E736	AFH3-44	D0674	FP377	TMQ-65	TVL-4739.4	
B	■40	400		PRS450V60	BR4025	TC795	TD-40-450	TVA-1511	
C	▲40	400							
D	40	200							
C2	100	25	11E737	PRS25V100	BBR100-25	TC2501	TD-100-25	TVA-1207	
C3 A	▲40	200	11E734	AFH2-57	B0450	FP217.87	TMD-38	TVL-2575	
B	▲40	200							
C4	50	20		SRE25V50	BBR50-25	TC29	TD-50-25	TE-1209	
C5	50	20		SRE25V50	BBR50-25	TC29	TD-50-25	TE-1209	
C6	20	350	11E733	PRS450V20	BR2035	TC65	TD-20-350	TVA-1608	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA							NOTES
	CAP.	VOLT	TOL	COLUMBIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.		
C7	10		NPO 10%		NPO-DI 10	DTZ-10	C10QIC	CNO-410	5TCC-Q10S 10%*		
C8	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22		
C9	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22		
C10	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*		
C11	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C12	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22		
C13	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C14	1		10%			TCZ-1		CNO-510	5TCCB-V1S 10%*		
C15	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C16	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*		
C17	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*		
C18	2-9					829-10					
C19	2.5		N2200								①
C20	220				BPD-00022	DD-221	L10T22	B-322	5GA-T22		
C21	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47		
C22	.1	100			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1		
C23	1000				BPD-001	DD-102	BYA10D1M	B-210	5HK-D1		
C24	.0022	200			P288N-0022	D6-222	CUB6D22	GEM-6222	4TM-D22		
C25	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C26	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C27	.022	200			P288N-022	DD-203	CUB4S22	GEM-4122	2TM-S22		
C28	470				BPD-00047	DD-471	BYA10T47	B-347	5GA-T47		
C29	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*		
C30	9		N4700 10%								
C31	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C32	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47		
C33	50000				BPD-05	DF-503	CUB6S5	GEM-615	5HK-S5		
C34	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C35	2		N750								
C36	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1		
C37	47		N750 10%		N750-DI 47	DTN-47	C10Q47U	CN7-447	5TCU-Q47S 10%*		
C38	33		N750 10%		N750-DI 33	DTN-33	C10Q33U	CN7-433	5TCU-Q33S 10%*		

TUNER CHASSIS BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CAPACITORS (cont)

ITEM No.	RATING CAP.	VOLT	TOL	REPLACEMENT DATA COLUMBIA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C39	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C40	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C41	100				BPD-0001	DD-101	L10T1	UC-531	5GA-T1	
C42	680				BPD-00068	DD-681	L10T68	B-368	5GA-T68	
C43	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C44	2000		10%		DI-2000		PM6D2	JL-220	6TM-D2	
C45	2000		10%		DI-2000		PM6D2	JL-220	6TM-D2	
C46	.0022	200	10%		V84C 2D22		PM6D22	GTM-2222	6TM-D22	
C47	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C48	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C49	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C50	330		10%		DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C51	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C52	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C53	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C54	33		N750 10%		N750-DI 33	DTN-33	C10Q33U	CN7-433	5TCU-Q33S 10%*	
C55	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C56	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C57	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C58	.0022	200	10%		V84C2D22		PM6D22	GTM-2222	6TM-D22	
C59	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C60	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C61	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C62	330		10%		DI-330	MD-331	L10T33	JL-333	5GA-T33S 10%*	
C63	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C64	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C65	.0047	400			P488N-0047	D6-472	CUB6D47	GEM-6247	6TM-D47	
C66	33		N750 10%		N750-DI 33	DTN-33	C10Q33U	CN7-433	5TCU-Q33S 10%*	
C67	10		NPO 10%		NPO-DI 10	DTZ-10	C10Q1C	CNO-410	5TCC-Q1S 10%*	
C68	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C69	1500		10%		DI-1500		PM6D15	JL-215	6TM-D15	
C70	.47	200			P288N-47		CUB2P47	GEM-2047	2TM-P47	
C71	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C72	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C73	82		10%		1469-000082	TCZ-82	22R5Q82	CNO-482	MS-482	
C74	82		10%		1469-000082	TCZ-82	22R5Q82	CNO-482	MS-482	
C75	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C76	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	

① Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING RESISTANCE	WATTS	REPLACEMENT DATA COLUMBIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg *	½	9E592				■ UE3957	Level, Channel 1
B	1meg *	½						Level, Channel 2
R2A	2meg †	½	9E593				▲ UE4026	Contour, Channel 1
B	2meg †	½						Contour, Channel 2
R3A	1meg	½	9E590	B-70	AD47-1meg-Z	Q13-137		Bass, Channel 1
B	1meg	½		SR-70	Not Req.	M13-137	▲ UE3913	Bass, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R4A	100K	½	9E591	B-40	A47-100K-S	Q11-128	U41	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	500K	½	9E589	B-60	AD47-500K-Z	Q13-133		Treble, Channel 1
B	500K	½		SR-60	Not Req.	M13-133	‡ UE3915	Treble, Channel 2
C	Shaft			Not Req.	FS-3	Not Req.		
R6A	400Ω	1(WW)	9E594	WN-401	39-500	W11-202	C400P	Hum Adjust
B	Shaft			Not Req.	Not Req.	SK-5	Not Req.	

* Tap @ 100K
† Taps @ 700K & 1.5meg
■ "STA-LOC" equivalent: FB16T15, RU16T15, CS3500
▲ "STA-LOC" equivalent: FC26DT16, RU26DT125, CS3500
▲ "STA-LOC" equivalent: FA16A, RU16A, CS3500
‡ "STA-LOC" equivalent: FA55A, RU55A, CS3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

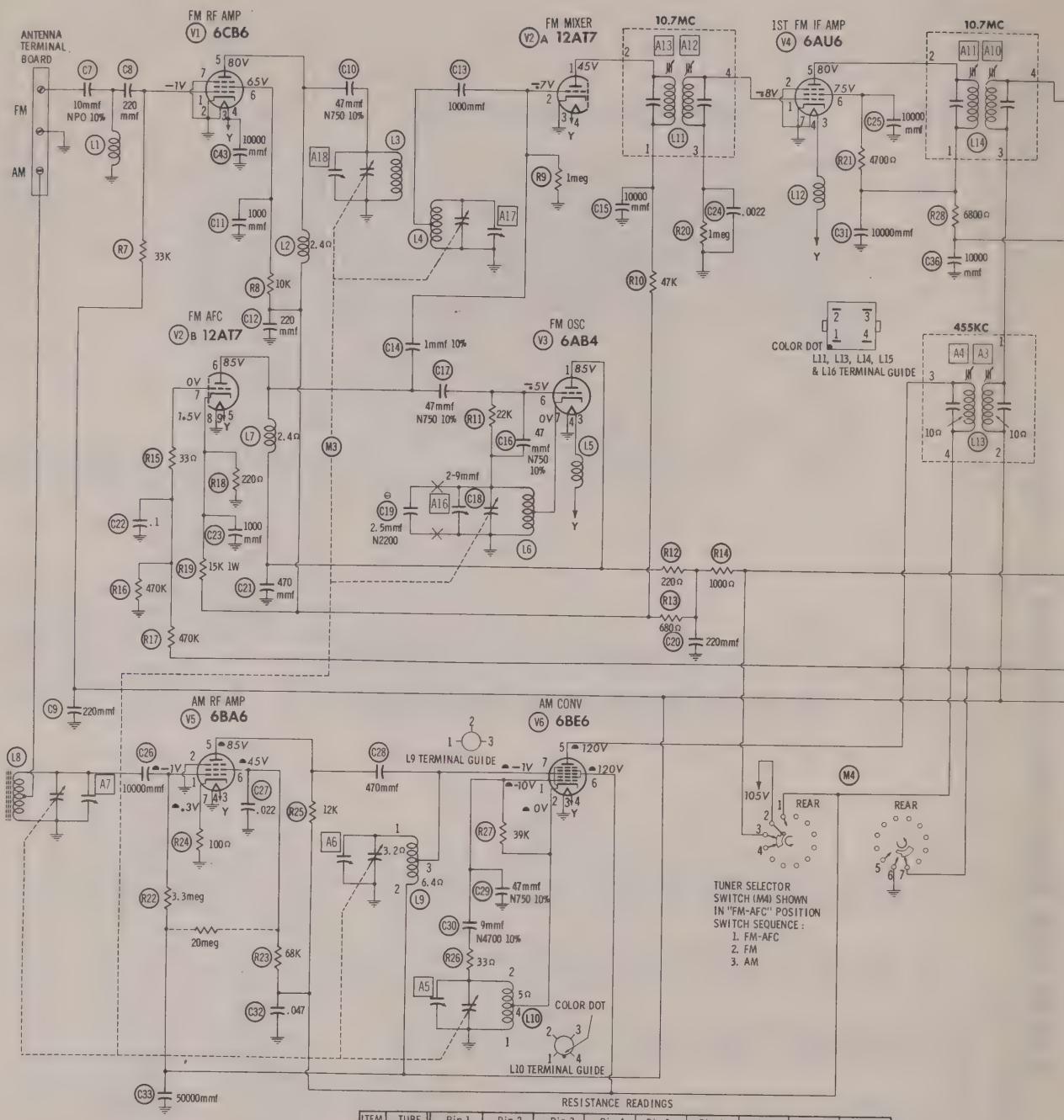
ITEM No.	RATING OHMS	WATT	COLUMBIA PART No.	NOTES
R7	33K			
R8	10K			
R9	1meg			
R10	47K			
R11	22K			
R12	220Ω			
R13	680Ω			
R14	1000Ω			
R15	33Ω			
R16	470K			
R17	470K			
R18	220Ω			
R19	15K	1		
R20	1meg			
R21	4700Ω			
R22	3.3meg			
R23	68K			
R24	100Ω			
R25	12K			
R26	33Ω			
R27	39K			
R28	6800Ω			
R29	4700Ω			
R30	330Ω			
R31	68Ω			
R32	100K			
R33	100K			
R34	2.2meg			
R35	15K			
R36	15K			
R37	100K 5%			
R38	100K 5%			
R39	100K			
R40	470K			
R41	1000Ω	2		
R42	330Ω	2		
R43	180K			
R44	180K			
R45	220K			
R46	2.2meg			
R47	47K			
R48	1000Ω			

ITEM No.	RATING OHMS	WATT	COLUMBIA PART No.	NOTES
R49	2.2meg			
R50	10K 5%			
R51	47K			
R52	1000Ω			
R53	470K			
R54	33K			
R55	180K			
R56	470K			
R57	220K			
R58	220K			
R59	220K			
R60	2.2meg			
R61	47K			
R62	2.2meg			
R63	47K			
R64	470K			
R65	33K			
R66	180K			
R67	470K			
R68	220K			
R69	220K			
R70	3300Ω			
R71	3300Ω			
R72	2700Ω			
R73	1meg			
R74	220K			
R75	560Ω			
R76	180K			
R77	1meg			
R78	220K			
R79	560Ω			
R80	180K			
R81	220K			
R82	100Ω			
R83	130Ω 5%	3	16E424	
R84	220K			
R85	100Ω			
R86	6800Ω			
R87	6800Ω			
R88	8200Ω	2		
R89	1000Ω 5%	3		

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA COLUMBIA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	FM Ant. Coil		19-1000	19-1000	BC-561	4602		
L2	RF Choke	21E207						3.3uh ①
L3	FM RF Plate Coil							
L4	FM RF Grid Coil							
L5	Fil. Choke	21E206	19-1001	19-1001	BC-562	4604		1.5uh ①
L6	FM Osc. Coil							
L7	RF Choke	21E207						3.3uh ①
L8	Loopstick	20E323						
L9	AM RF Coil	20E325						
L10	AM Osc. Coil	20E324						
L11	1st FM IF Trans.	20E326	16-3487	16-3487	FM-254	1463		
L12	Fil. Choke	21E206	19-1001	19-1001	BC-562	4604		1.5uh ①
L13	1st AM IF Trans.	20E328	16-6758	16-6758	BC-352	12-C1	RF-1	
L14	2nd FM IF Trans.	20E326	16-3487	16-3487	FM-254	1463		
L15	2nd AM IF Trans.	20E328	16-6758	16-6758	BC-353	12-C2	RF-2	
L16	3rd FM IF Trans.	20E326	16-3487	16-3487	FM-254	1463		
L17	Fil. Choke	21E206	19-1001	19-1001	BC-562	4604		1.5uh ①
L18	Discriminator	20E327	17-3494	17-3494	FM-253	1464		

① IRC Part #CLA



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6CB6	3meg	0Ω	0Ω	.1Ω	†3000Ω	†13K	0Ω		
V2	12AT7	†50K	1meg	0Ω	.1Ω	.1Ω	†2500Ω	1meg ● 330Ω	220Ω	0Ω
V3	6AB4	†2500Ω	NC	.8Ω	0Ω	TP	22K	0Ω		
V4	6AU6	1meg	0Ω	.8Ω	0Ω	†7400Ω	†12K	0Ω		
V5	6BA6	◓ 5.7meg	0Ω	.1Ω	0Ω	†◓13K	†◓69K	100Ω		
V6	6BE6	◓ 39K	.4Ω	0Ω	.1Ω	†◓1300Ω	†◓1300Ω	◓ 2.4meg		
V7	6BA6	2.4meg	0Ω	0Ω	.1Ω	†670Ω	†5300Ω	68Ω		
V8	6AU6	100K	0Ω	0Ω	.1Ω	†12K	†12K	0Ω		
V9	6AL5	0Ω	100K	.1Ω	0Ω	200K	0Ω	100K		

ALL MEASUREMENTS TAKEN IN "FM" POSITION UNLESS OTHERWISE DESIGNATED.
◓ MEASURED IN "AM" POSITION.
† MEASURED FROM PIN 8 OF V15
NC NO CONNECTION
TP TIE POINT
● MEASURED IN "FM-AFC" POSITION.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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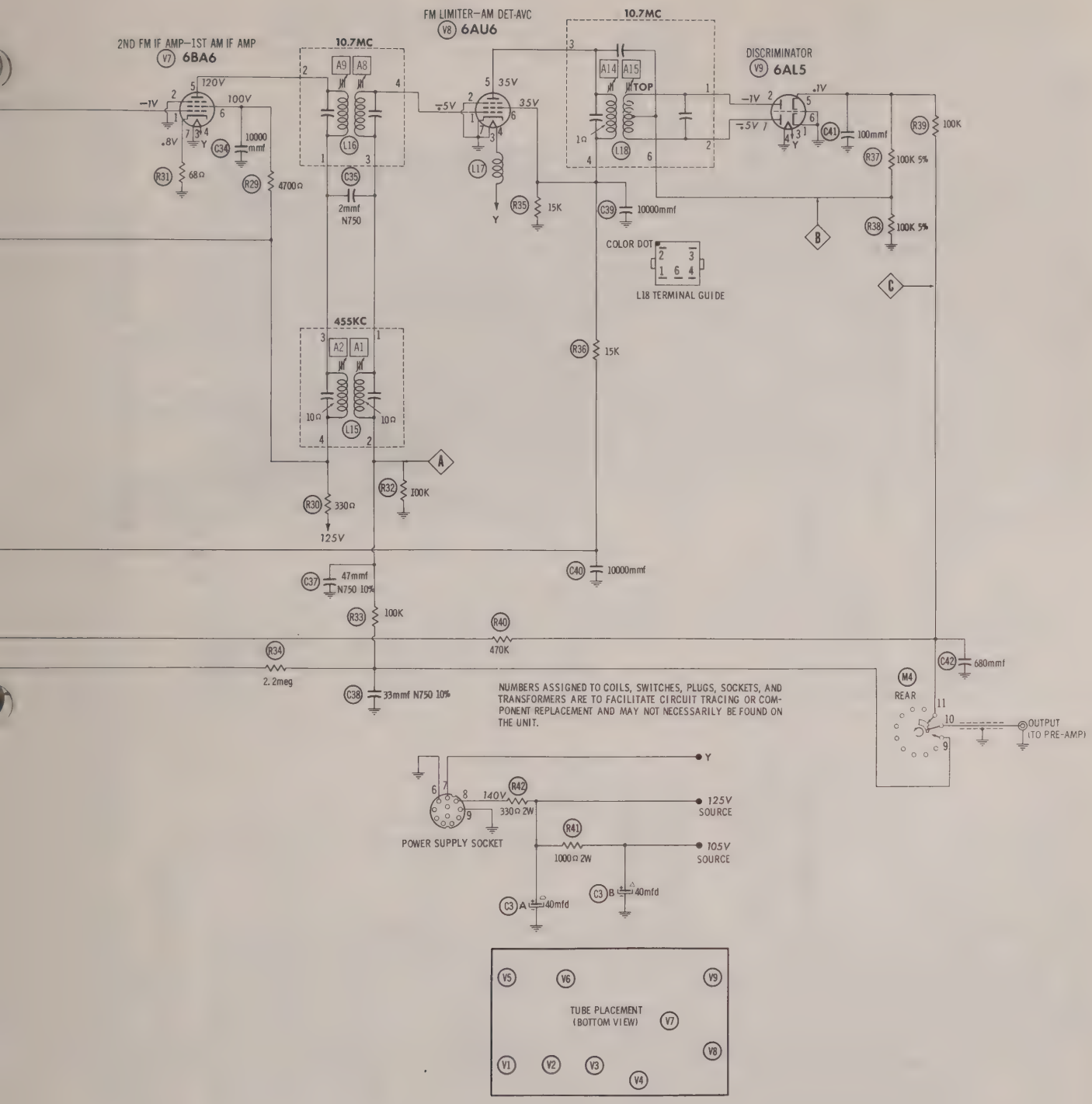
TUNER SCHEMATIC



COLUMBIA
MODELS 645, 650

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	COLUMBIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1.05A	580 VCT @ .100A Tap @ 260 VCT @ .035A	5V @ 3A	2E112 ①						
	SEC. 3	SEC. 4	SEC. 5							
	5V @ 2A	12.6V @ .9A	6.3V @ 2.7A							

① Part #2E111 used in Model 650

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	COLUMBIA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω CT	6-8Ω CT	3E230 ①							① Model 650 uses Part #3E229
T3	1800Ω	3-4Ω	3E231 ①							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	COLUMBIA PART No.	QUAM PART No.	
SP1	12"	PM	12-13Ω	1E140	12A31	
SP2	8"	PM	12-13Ω	1E137	8A31	
SP3	5"	PM	6-7Ω	1E139	5A15	
SP4	4"	PM	6-7Ω	1E138	4A15	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA							REMARKS
	COLUMBIA PART No.	ASTATIC PART No.		JENSEN PART No.		ELECTRO-VOICE PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	Stereo SC1 †	13-TB *						† Includes needle * Includes needle & mounting mechanism

PHONO NEEDLE

(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	COLUMBIA PART No.	JENSEN PART No.	WALCO PART No.	
M2		CS-1X †		† Jewel

MISCELLANEOUS

ITEM No.	PART NAME	COLUMBIA PART No.	NOTES
M3	Tuning Cap	14E106	FM-AM (AM Sections: Ant. 13-332mmf, RF 12-217mmf, Osc. 10-143mmf)
M4	Switch	19E622	AM-FM-FM AFC (Tuner Selector)
M5	Switch	19E621	Off-Stereo-Mono-Tuning (Preamp. Selector)

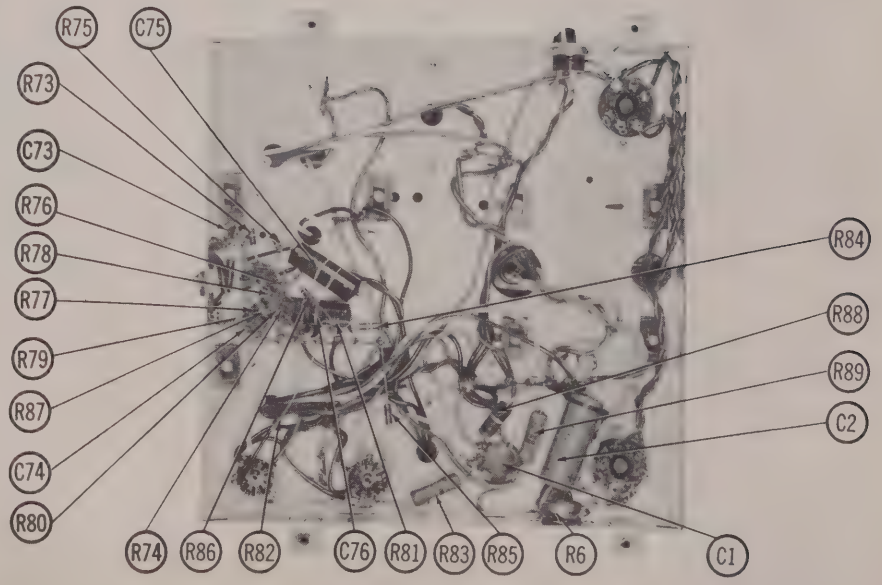
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

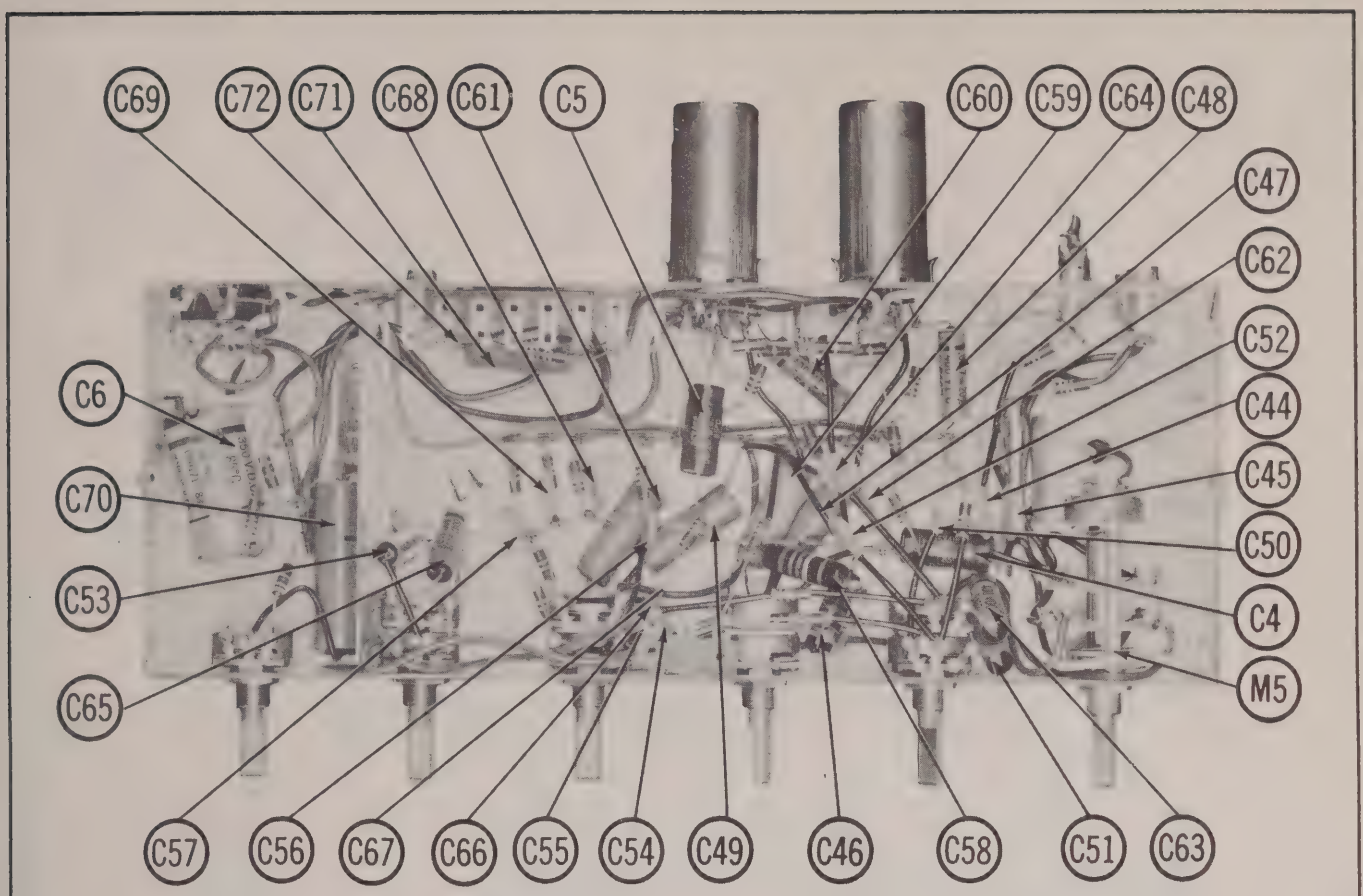
NAME	PART NO.	DESCRIPTION
Knob	8E495	
Pointer	18E365	
Cabinet	17E809	Model 645
Cabinet	17E810	Model 650
Cabinet Back	18E360	Model 645
Cabinet Back	18E364	Model 650
Dial Glass	18E366	

WIRING DATA

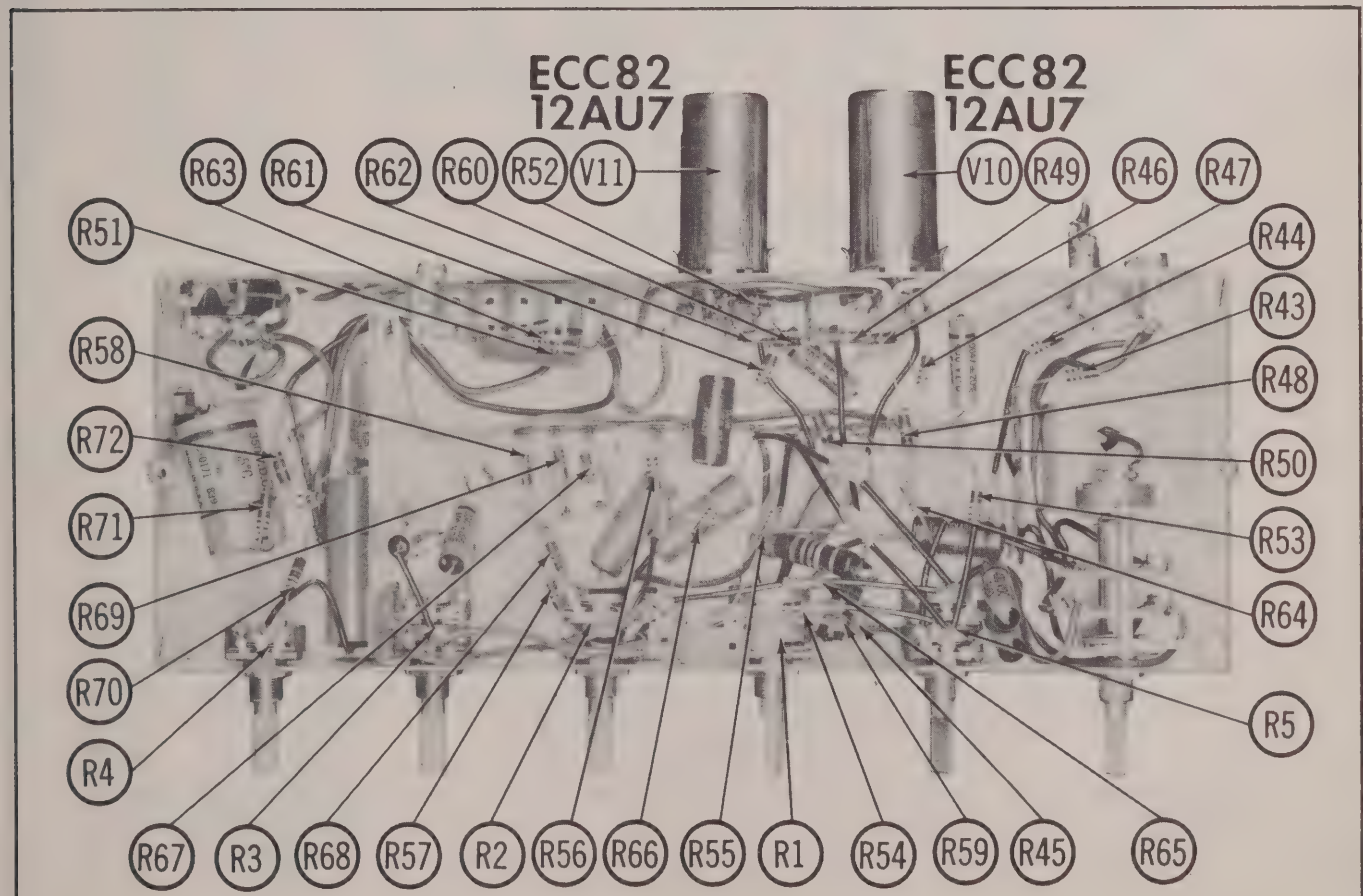
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



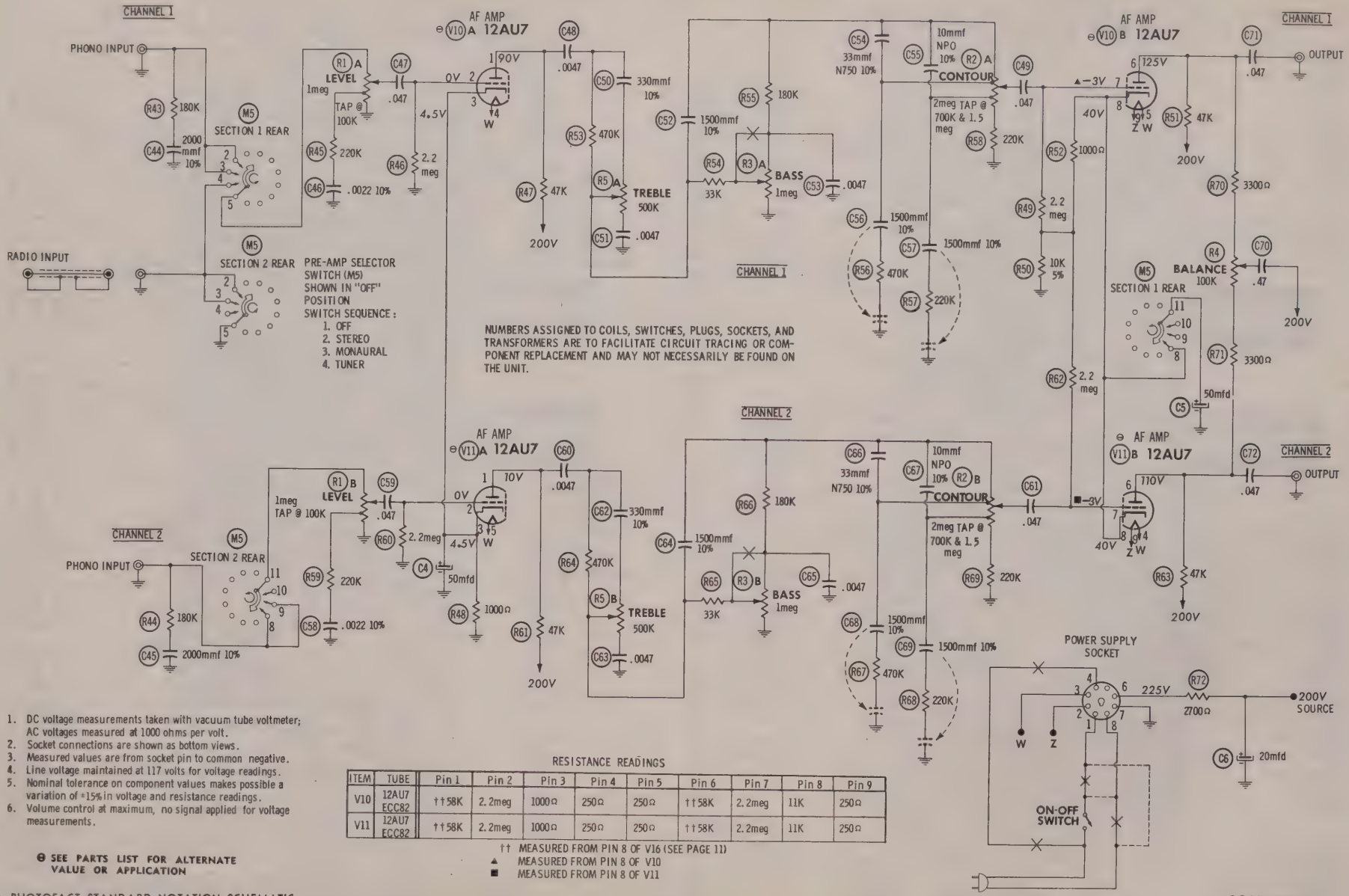
AMP CHASSIS BOTTOM VIEW



PREAMP. CHASSIS BOTTOM VIEW — CAPACITOR & MISC. IDENT.



PREAMP. CHASSIS BOTTOM VIEW — RESISTOR & TUBE IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V10	12AU7 ECC82	††58K	2.2meg	1000Ω	250Ω	250Ω	††58K	2.2meg	11K	250Ω
V11	12AU7 ECC82	††58K	2.2meg	1000Ω	250Ω	250Ω	††58K	2.2meg	11K	250Ω

†† MEASURED FROM PIN 8 OF V16 (SEE PAGE 11)
▲ MEASURED FROM PIN 8 OF V10
■ MEASURED FROM PIN 8 OF V11

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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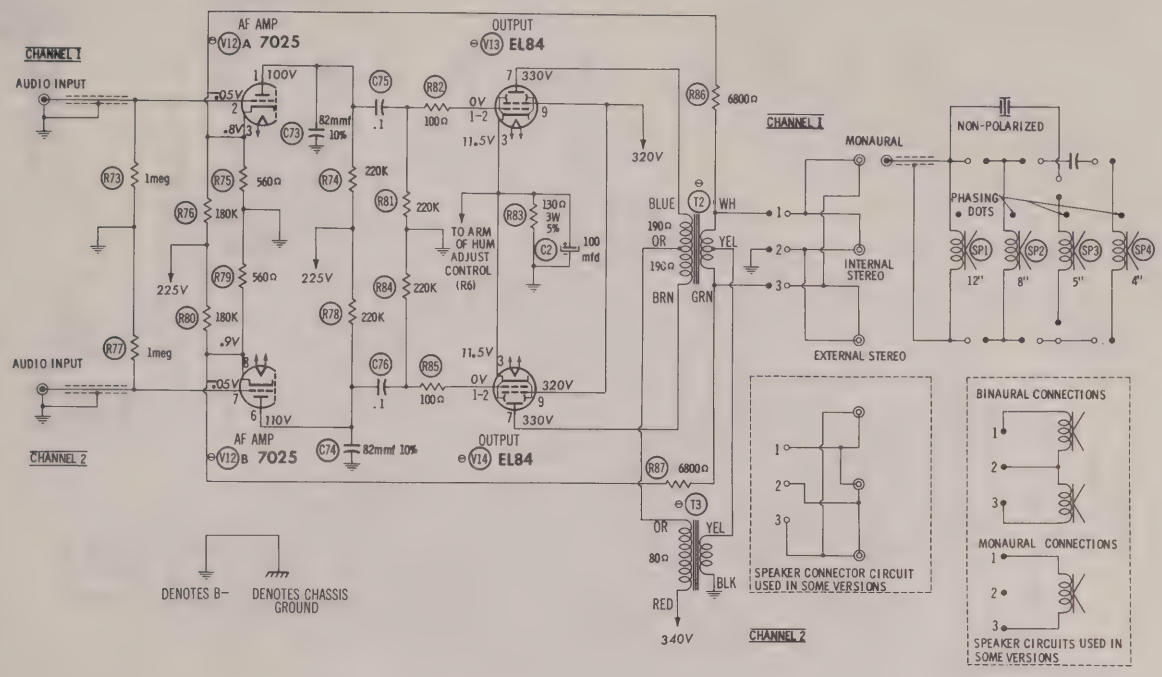
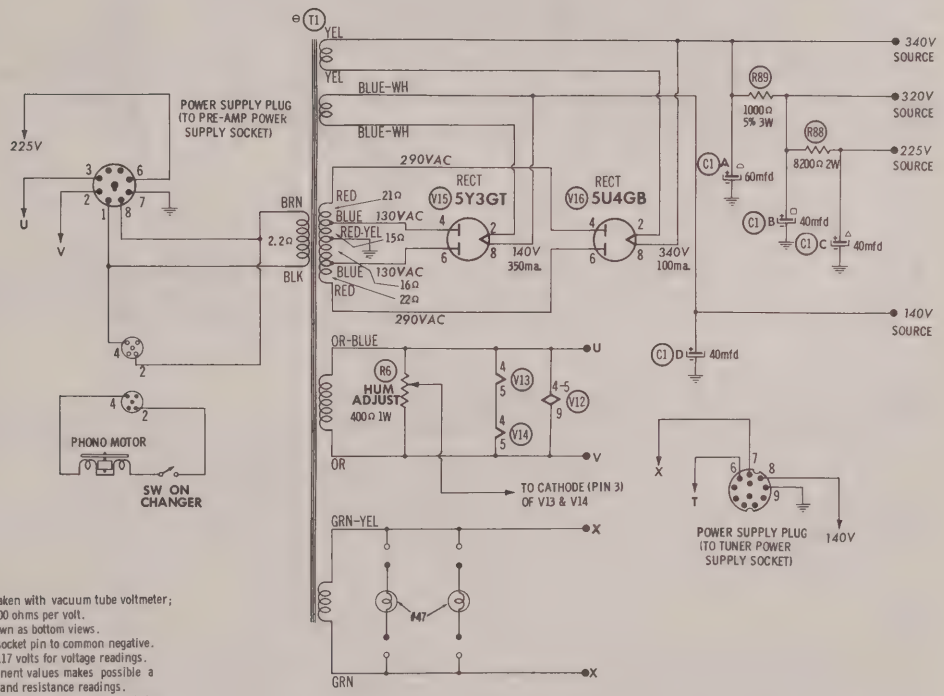
COLUMBIA MODELS 645, 650

PREAMP. SCHEMATIC





1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
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3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ± 15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V12	7025	††230K	1meg	500Ω	250Ω	250Ω	††230K	1meg	500Ω	250Ω
V13	EL84 6BQ5	220K	220K	130Ω	250Ω	250Ω	NC	††270Ω	NC	††1000Ω
V14	EL84 6BQ5	220K	220K	130Ω	250Ω	250Ω	NC	††270Ω	NC	††1000Ω
V15	5Y3GT	NC	¶	NC	14Ω	NC	16Ω	NC	¶	
V16	5U4GB	NC	¶	NC	38Ω	NC	37Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
†† MEASURED FROM PIN 8 OF V16
NC NO CONNECTION

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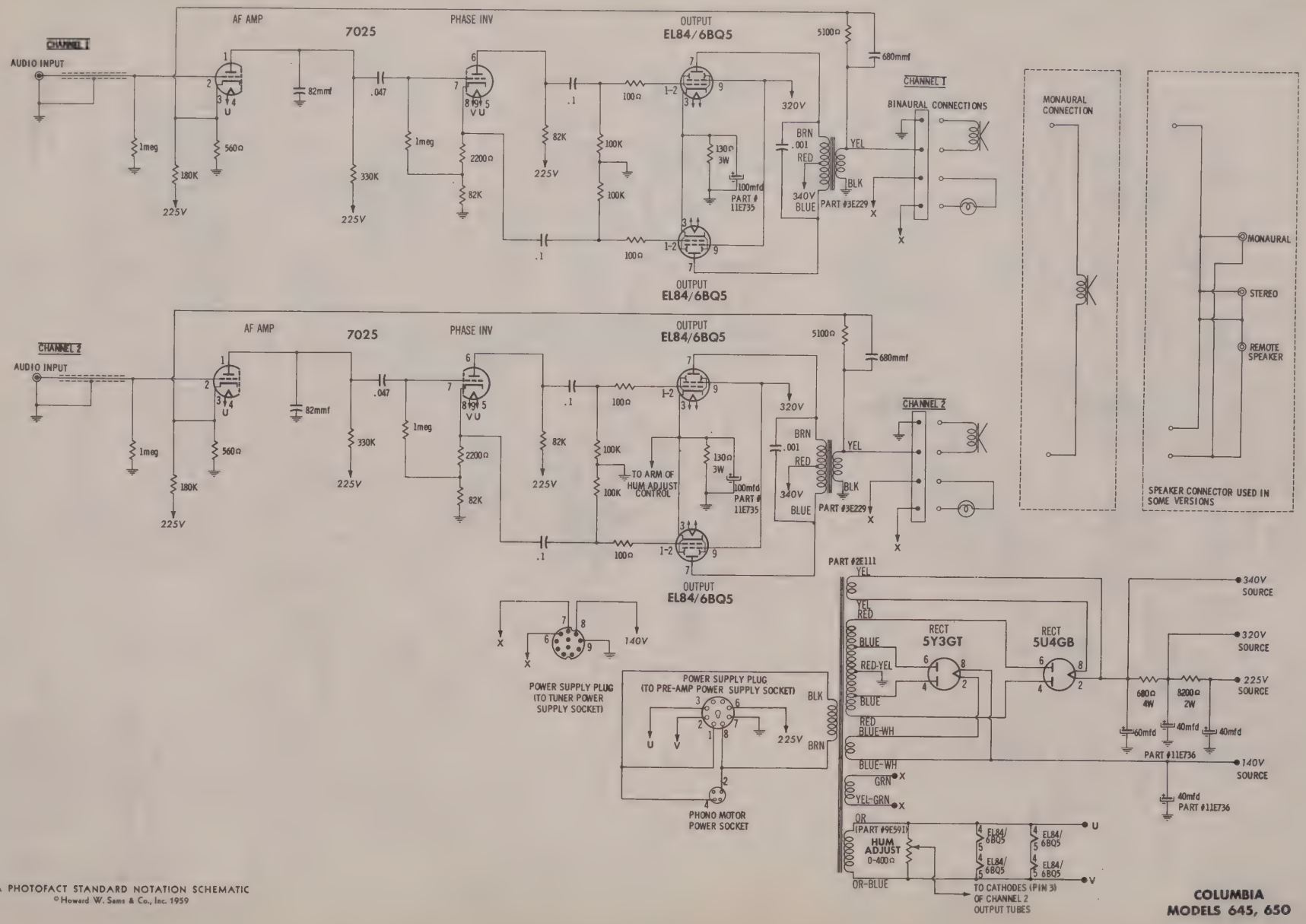
COLUMBIA
MODELS 645, 650

AMP. SCHEMATIC USED IN MODEL 645



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COLUMBIA MODELS 645, 650

ALT. AMP. SCHEMATIC USED IN MODEL 650

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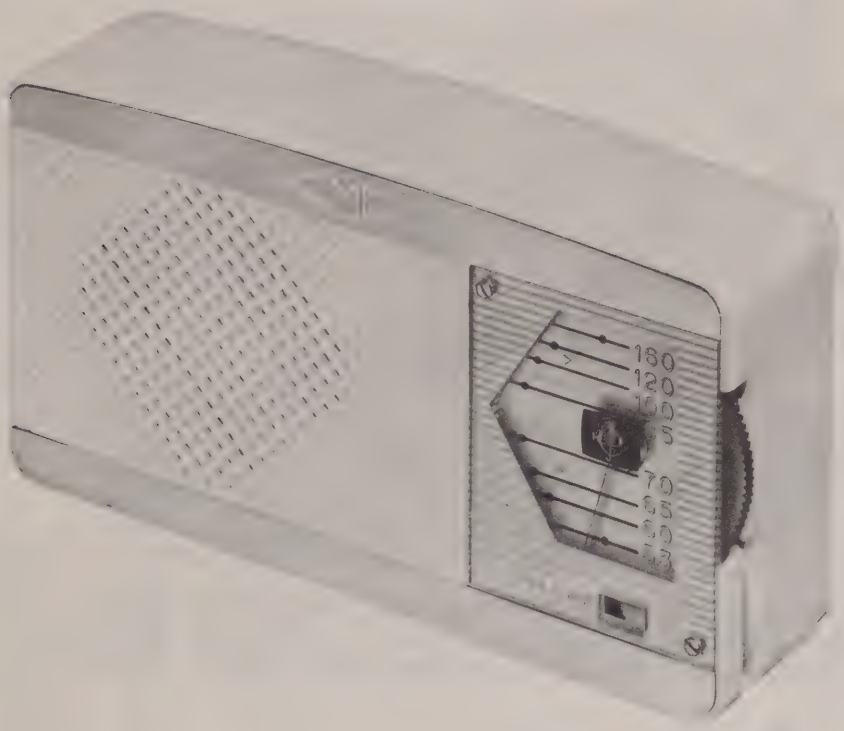
CONTINENTAL MODEL 150

CONTINENTAL MODEL 150



CONTINENTAL MODEL 150

TRADE NAME	Continental Model 150
IMPORTER	Continental Merchandise Co., Inc., 236 Fifth Ave., New York 1, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	520KC — 1650KC
RATING	12MA @ 9 Volts DC (No Signal, Min. Volume) 13MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output r ading.

Suggested alignment tools:
A3, A5..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A4..... GENERAL CEMENT #9087, 9089
WALSCO #2528

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	1650KC	"	"	A3	Adjust for maximum output.
3.		"	600KC	600KC	"	A4	"
4.		"	1200KC	1200KC	"	A5	"

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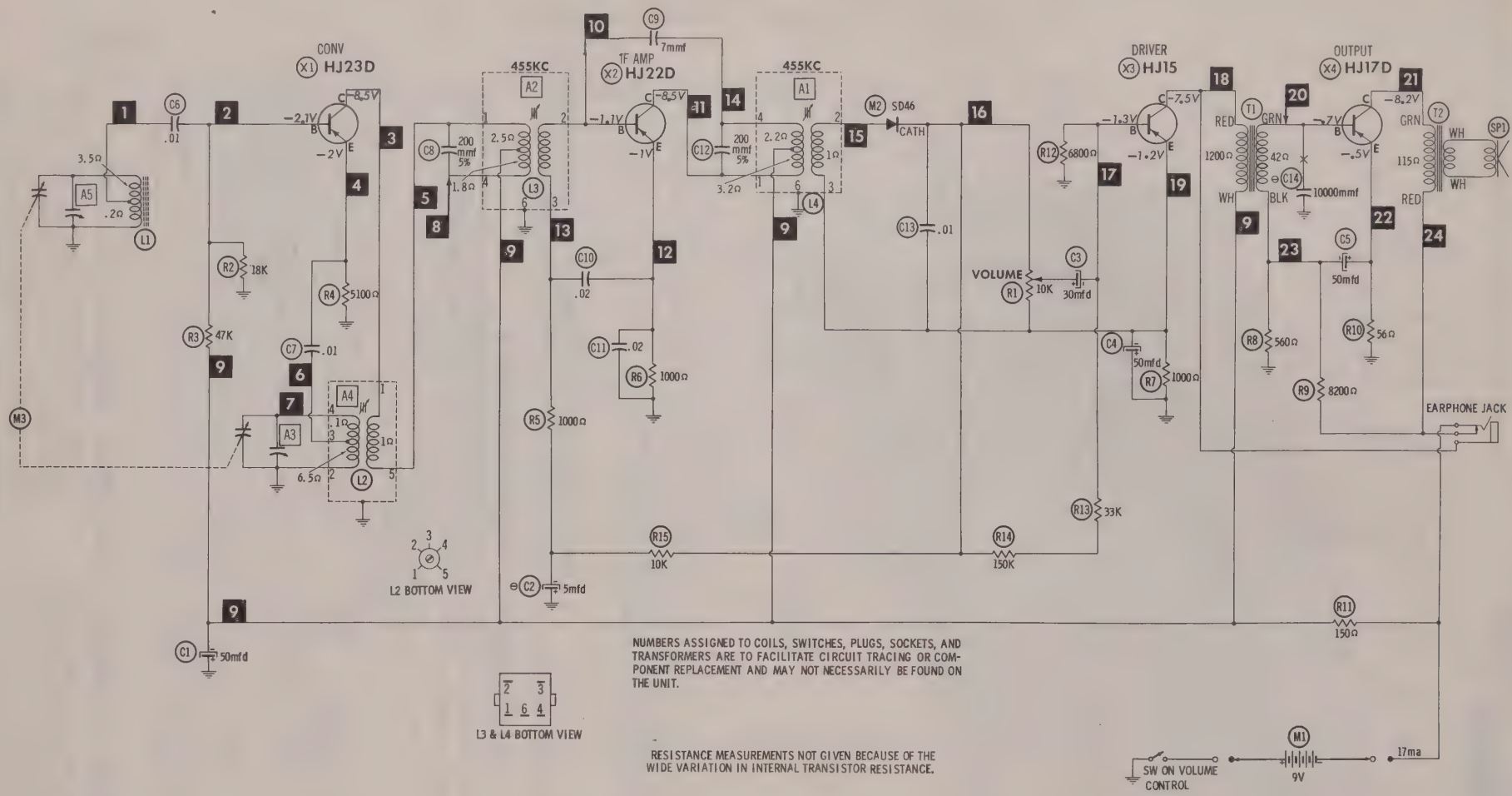
JF237

SET 457 FOLDER 6



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

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CONTINENTAL MODEL 150

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	HJ23D	Converter		2N411	2N486	2N411	PNP
X2	HJ22D	IF Amplifier		2N409	2N484	2N409	PNP
X3	HJ15	Driver		2N405	2N362	2N405	PNP
X4	HJ17D	Output		2N407	2N631	2N407	PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Continental PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	50	10	①	XPP-10050	NLW50-10	TT10X50	ML50-15	TE-1119	
C2	5	3		XPP-3005	NLW5-6	TT6X5	ML5-6	TE-1052.2	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C5	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	

① Some versions may use 6mfd@6VDC in this application.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Continental PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	.01	50			P285N-01	DM-103	STM-1S1	GTM-111	TG-S10	
C7	.01	50			P285N-01	DM-103	STM-1S1	GTM-111	TG-S10	
C8	200		5%						5TCC-T2S 5%*	
C9	7						C10V7C		5GA-V7S *	
C10	.02	50			P285N-02	DDM-203	H-05S2	GTM-1122	TG-S20	
C11	.02	50			P285N-02	DDM-203	H-05S2	GTM-1122	TG-S20	
C12	200		5%						5TCC-T2S 5%*	
C13	.01	50			P285N-01	DM-103	STM-1S1	GTM-111	TG-S10	
C14	10000				C-80V103AM	DM-103	H-05S1	TA-110	TG-S10	①

① Not used in some versions.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Continental PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	10K			B16-216				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Continental PART No.	NOTES
	OHMS	WATT		
R2	18K			
R3	47K			
R4	5100Ω			
R5	1000Ω			
R6	1000Ω			
R7	1000Ω			
R8	560Ω			

ITEM No.	RATING		Continental PART No.	NOTES
	OHMS	WATT		
R9	8200Ω			
R10	56Ω			
R11	150Ω			
R12	6800Ω			
R13	33K			
R14	150K			
R15	10K			

PRINTED BOARD

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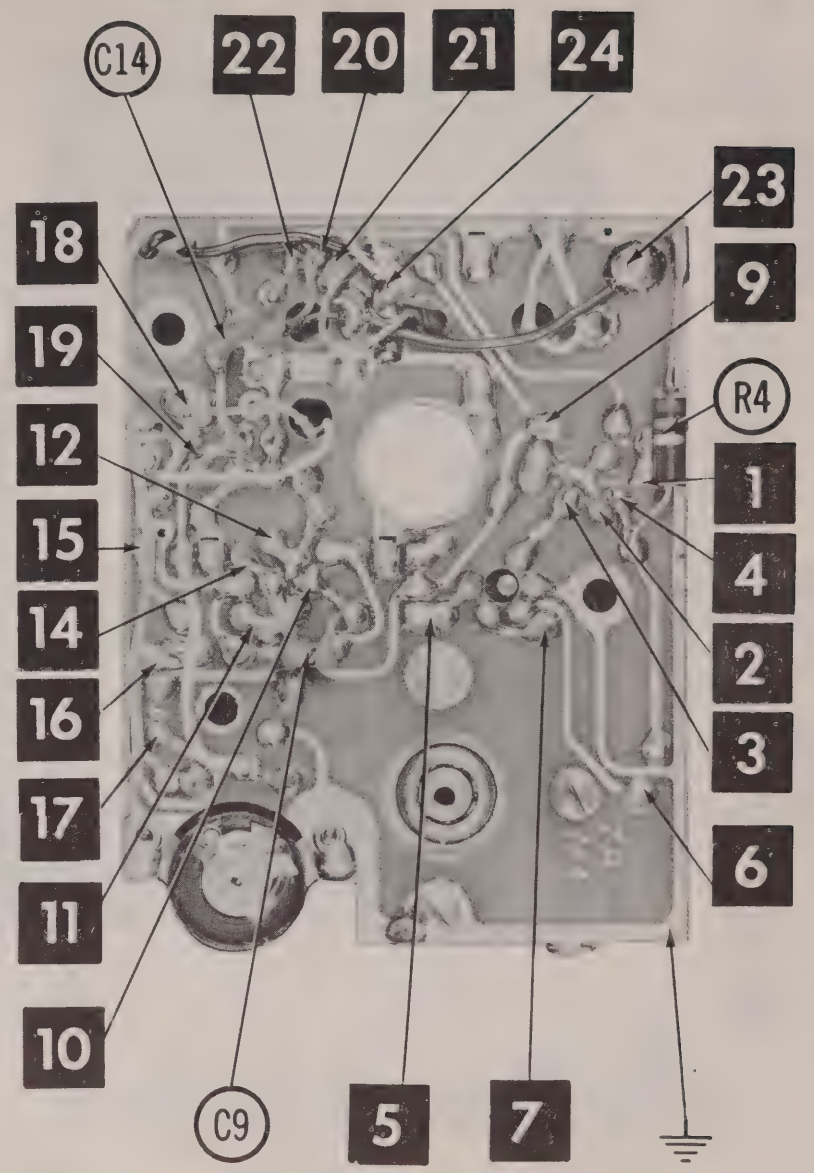


PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Continental PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	Input IF							
L4	Output IF							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	Continental PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5	1	TRT-1						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Continental PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	360Ω	10Ω	TRT-2	TR19			TA-20	TR-19		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Continental PART No.	QUAM PART No.	
SP1	2½"	PM	10-12Ω		25A07Z10.6	

BATTERIES

ITEM No.	VOLTAGE	Continental PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V			2U6		216		M-1604 TR-146R①	① Mercury Type

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		Continental PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	SD46		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	Continental PART No.	NOTES
M3	Tuning Cap. Printed Board	TR-104	2 Gang

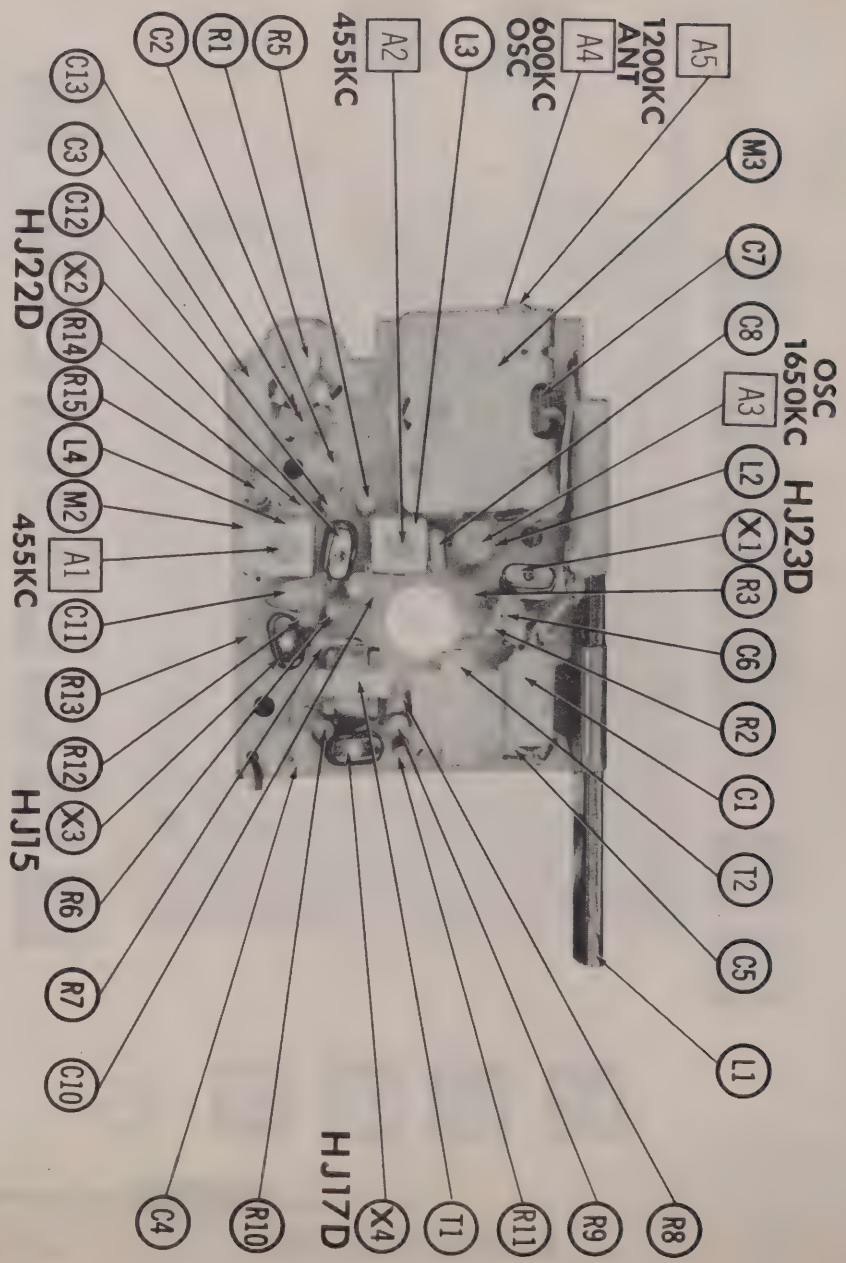
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



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EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

CROWN MODEL TR-610

CROWN
MODEL TR-610

CROWN
MODEL TR-610

TRADE NAME	Crown Model TR-610
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	6 Volts DC
TUNING RANGE—BROADCAST	525 — 1650KC
RATING	7.6MA @ 6 Volts DC (No Signal, Min. Volume) 9.5MA @ 6 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested alignment tools: A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	525KC	Tuning gang fully closed	"	A4	"
3.		"	1650KC	Tuning gang fully open	"	A5, A6	"
4.		"	650KC	650KC	"	A7	"

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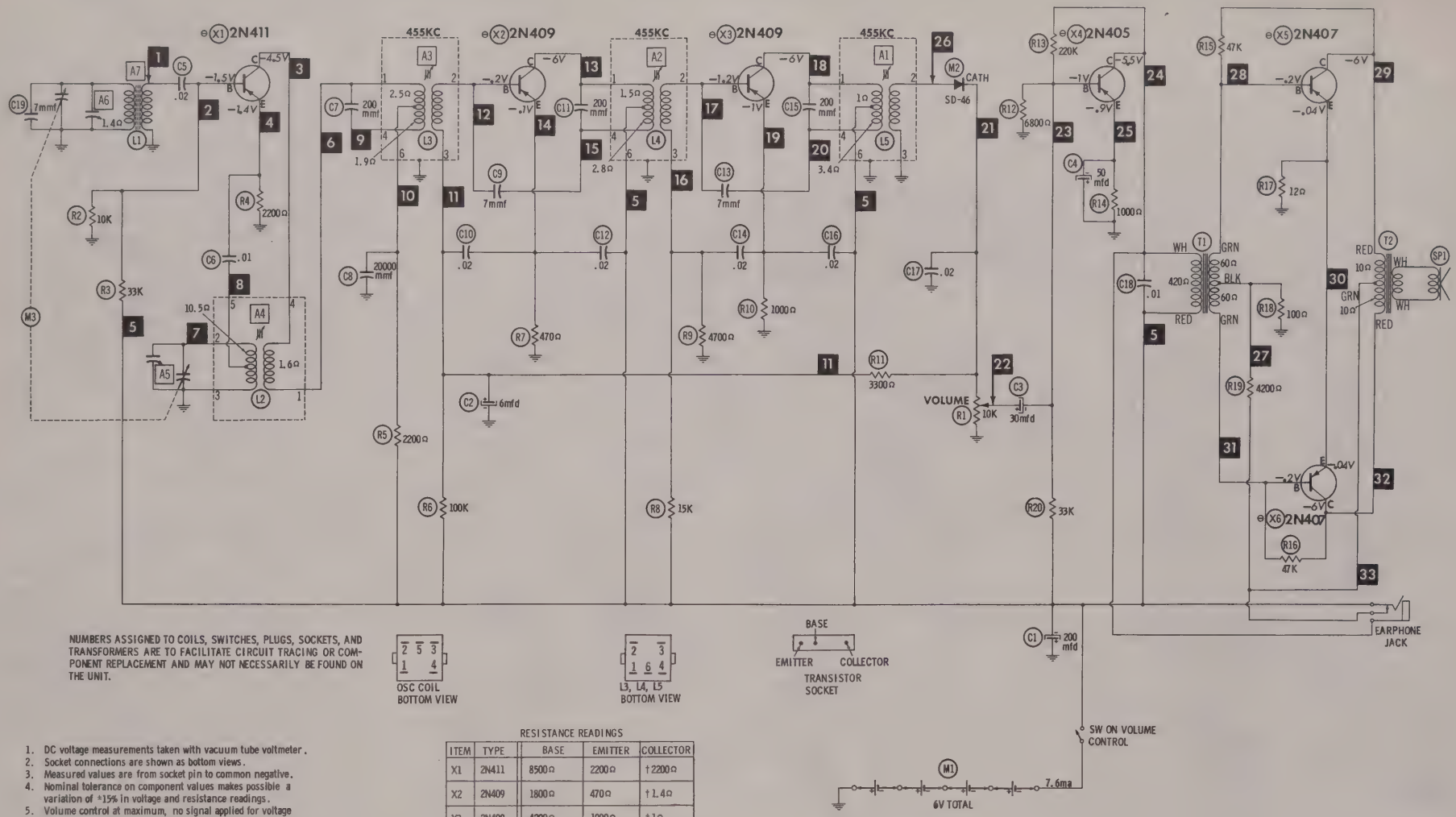
SET 457 FOLDER 7



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

OSC COIL
BOTTOM VIEW

L3, L4, L5
BOTTOM VIEW

TRANSISTOR SOCKET

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TYPE	BASE	EMITTER	COLLECTOR
X1	2N411	8500Ω	2200Ω	†2200Ω
X2	2N409	1800Ω	470Ω	†1.4Ω
X3	2N409	4200Ω	1000Ω	†1Ω
X4	2N405	6000Ω	1000Ω	†420Ω
X5	2N407	160Ω	12Ω	†10Ω
X6	2N407	160Ω	12Ω	†10Ω

TRANSISTORS REMOVED FOR RESISTANCE MEASUREMENTS.
† MEASURED FROM JUNCTION OF C1 AND R20.

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CROWN
MODEL TR-610

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE		USE	REPLACEMENT DATA CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	2N411	HJ-226*	Converter		2N411	2N486	2N411	PNP
X2	2N409	HJ-228*	1st IF Amplifier		2N409	2N483	2N409	PNP
X3	2N409	HJ-228*	2nd IF Amplifier		2N409	2N482	2N409	PNP
X4	2N405	HJ-15 *	Driver		2N405	2N362	2N405	PNP
X5	2N407	HJ-17 *	Output		2N407	2N632	2N407	PNP } Matched
X6	2N407	HJ-17 *	Output		2N407	2N632	2N407	PNP } Pair

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA CROWN PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	200	6		XPP-6200				TE-1104	
C2	6	6		XPP-6006	NLW5-6	TT6X5	ML6-6	TE-1085	
C3	30	6		XPP-6030	NLW30-6	TT6X30	ML30-6	TE-1092	
C4	50	6		XPP-6050	NLW50-6	TT6X50	ML50-6	TE-1100	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA CROWN PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C5	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C6	.01	50			V84C2S1	DM-103	H-05S1	TA-110	TG-S10	
C7	200				SI 200	DM-201	L10T2	UC-532	5GA-T2	
C8	20000				C-80V203M	DDM-203	H-05S2	TA-120	TG-S20	
C9	7				NPO-SI 6.8	TCZ-6R8	C10V7C	CNO-568	5GA-V75	
C10	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C11	200				SI 200	DM-201	L10T2	UC-532	5GA-T2	
C12	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C13	7				NPO-SI 6.8	TCZ-6R8	C10V7C	CNO-568	5GA-V75	
C14	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C15	200				SI 200	DM-201	L10T2	UC-532	5GA-T2	
C16	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C17	.02	50				DDM-203	H-05S2	TA-120	TG-S20	
C18	.01	50			V84C2S1	DM-103	H-05S1	TA-110	TG-S10	
C19	7				NPO-SI 6.8	TCZ-6R8	C10V7C	CNO-568	5GA-V75	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA CROWN PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	10K	1/4		B16-216				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	CROWN PART No.	NOTES
R2	10K			
R3	33K			
R4	2200Ω			
R5	2200Ω			
R6	100K			
R7	470Ω			
R8	15K			
R9	4700Ω			
R10	1000Ω			
R11	3300Ω			

ITEM No.	RATING OHMS	RATING WATT	CROWN PART No.	NOTES
R12	6800Ω			
R13	220K			
R14	1000Ω			
R15	47K			
R16	47K			
R17	12Ω			
R18	100Ω			
R19	4200Ω			
R20	33K			

PRINTED BOARD

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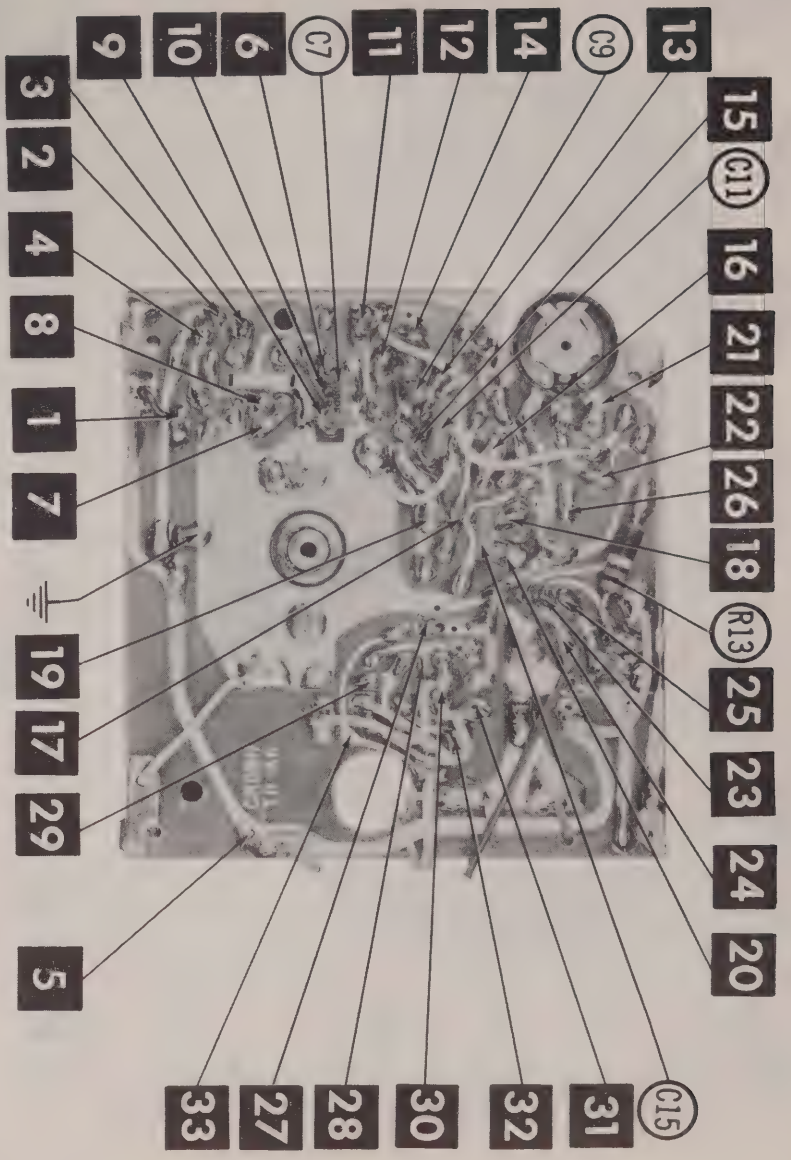


CROWN
MODEL TR-610

FOLDER 7

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		CROWN PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2	1	TRT-3						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	CROWN PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω CT	12-14Ω	TRT-4	TR-16			TA-20	TR-16		

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CROWN PART No.	QUAM PART No.	
SP1	2½"	PM	12-14Ω			

BATTERIES

ITEM No.	VOLTAGE	CROWN PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	6V			930①		1015 ①		M-15R①	① 4 Used

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CROWN PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2		SD-46	1N60	1N60	1N295	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	CROWN PART No.	NOTES
M3	Tuning Cap Printed Board	TR-86	2 Gang

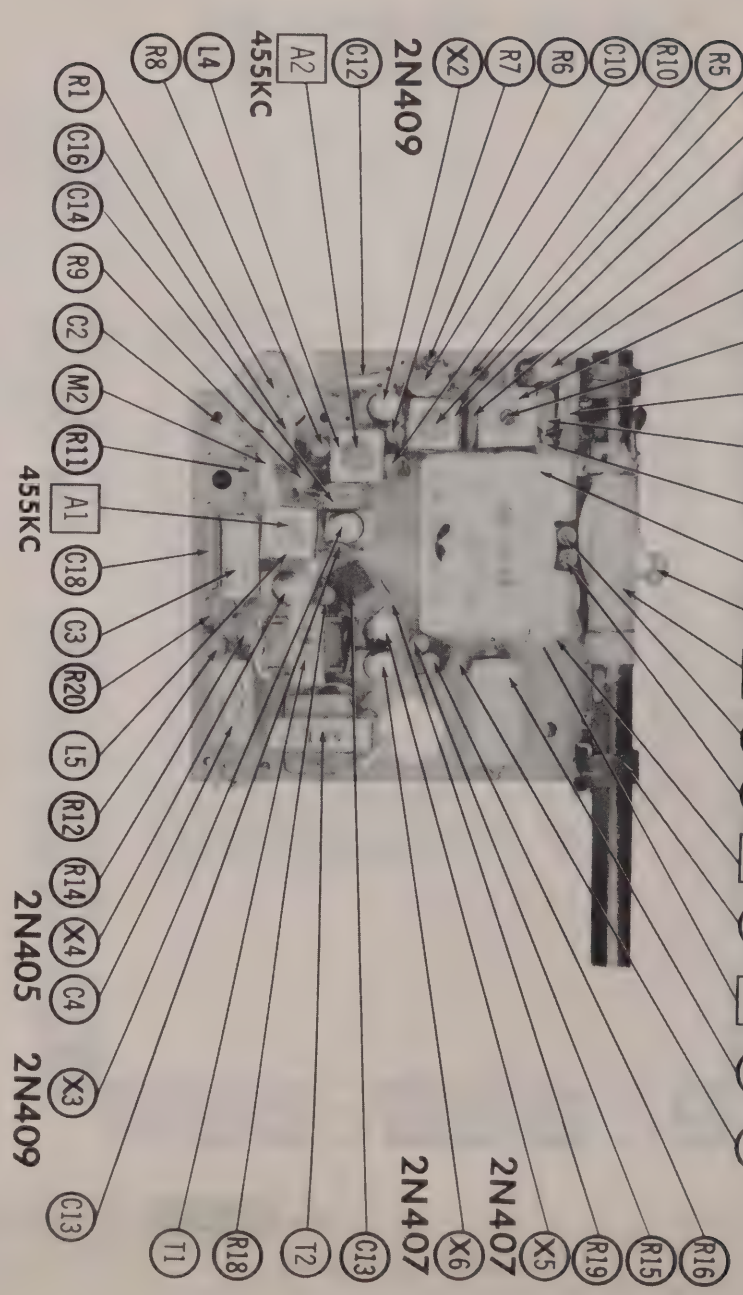
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

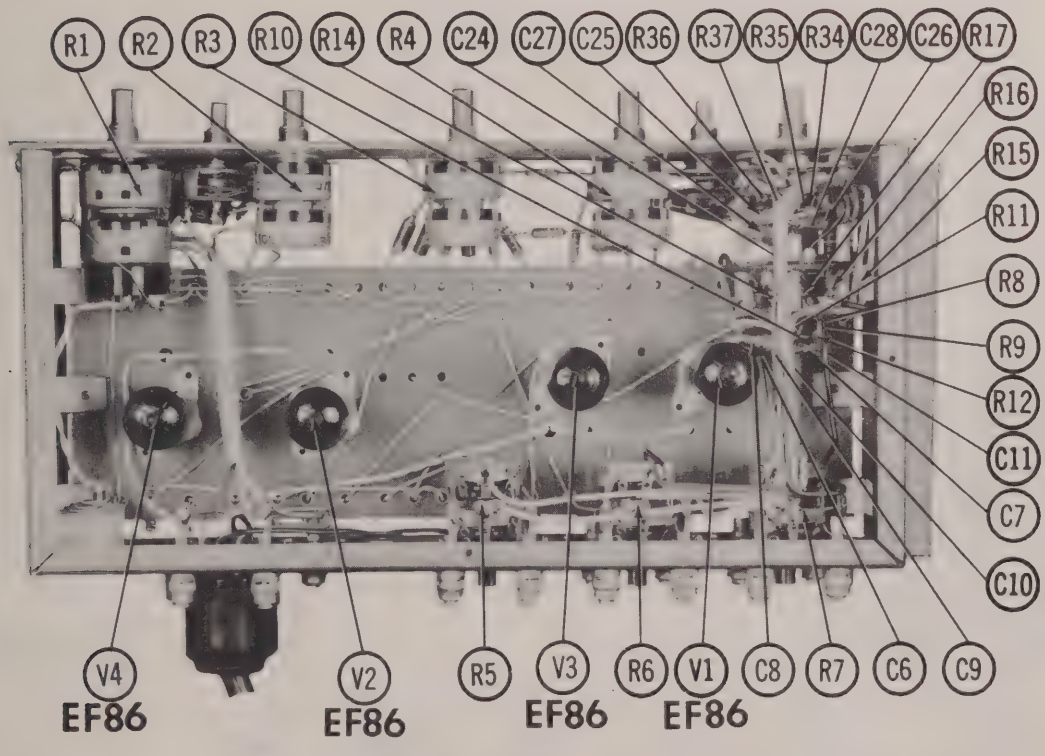
CHASSIS—TOP VIEW



PHOTOFACT* Folder

LEAK MODEL
Point One Stereo

TRADE NAME	Leak Model Point One Stereo
IMPORTER	British Industries Corp., 80 Shore Road, Port Washington, N. Y.
TYPE SET	Externally Powered 4 Tube Stereo Preamplifier



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JU228

SET 457 FOLDER 8

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Right Channel AF Amp.	EF86	①
V2	Right Channel AF Amp.	EF86	①
V3	Left Channel AF Amp.	EF86	①
V4	Left Channel AF Amp.	EF86	①

① Alternates Z729, 6267

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA LEAK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	8	350		AFH350V8	BR835	TC61	TD-8-350	TVA-1603	
C2	50	12		SRE12V50	NLW50-10	TT10X50	ML50-15	TE-1119	
C3	50	12		SRE12V50	NLW50-10	TT10X50	ML50-15	TE-1119	
C4	50	12		SRE12V50	NLW50-10	TT10X50	ML50-15	TE-1119	
C5	50	12		SRE12V50	NLW50-10	TT10X50	ML50-15	TE-1119	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA LEAK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C6	50		5%		1469-00005	TCZ-50	22R5Q5	MCE225	MS-45	
C7	200		5%		1469-0002	TCZ-200	22R5T2	MCE237	MS-32	
C8	68		5%		1469-000068	TCZ-68	22R5Q68	CNO-468	MS-468	
C9	50		5%		1469-00005	TCZ-50	22R5Q5	MCE225	MS-45	
C10	125		5%							
C11	68		5%		1469-000068	TCZ-68	22R5Q68	CNO-468	MS-468	
C12	.1	150			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C13	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C14	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C15	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C16	1000		5%		1469-001		1R5D1	MCE255	MS-21	
C17	1000		5%		1469-001		1R5D1	MCE255	MS-21	
C18	200		5%		1469-0002	TCZ-200	22R5T2	MCE237	MS-32	
C19	200		5%		1469-0002	TCZ-200	22R5T2	MCE237	MS-32	
C20	.01	150			P288N-01	DD-103	CUB2S1	GEM-411	2TM-S1	
C21	.25	250			P488N-25		CUB4P25	GEM-4025	4TM-P25	
C22	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C23	.02	150			P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	
C24	50		5%		1469-00005	TCZ-50	22R5Q5	MCE225	MS-45	
C25	68		5%		1469-000068	TCZ-68	22R5Q68	CNO-468	MS-468	
C26	200		5%		1469-0002	TCZ-200	22R5T2	MCE-237	MS-32	
C27	50		5%		1469-00005	TCZ-50	22R5Q5	MCE-225	MS-45	
C28	125		5%							
C29	68		5%		1469-000068	TCZ-68	22R5Q68	CNO-468	MS-468	
C30	.1	150			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C31	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C32	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C33	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C34	1000		5%		1469-001		1R5D1	MCE255	MS-21	
C35	1000		5%		1469-001		1R5D1	MCE255	MS-21	
C36	200		5%		1469-0002	TCZ-200	22R5T2	MCE237	MS-32	
C37	200		5%		1469-0002	TCZ-200	22R5T2	MCE237	MS-32	
C38	.01	150			P288N-01	DD-103	CUB2S1	GEM-411	2TM-S1	
C39	.25	250			P488N-25		CUB4P25	GEM-4025	4TM-P25	
C40	.1	250			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C41	.02	150			P288N-02	DD-203	CUB2S2	GEM-412	2TM-S2	

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA LEAK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	100K	1/2		B-41	AD47-100K-S	Q13-128	† UE4009-S	Volume, Right Channel
B	100K	1/2		SR-41	Not Req.	M13-128		Volume, Left Channel
C	Shaft			Not Req.	FS-3	Not Req.		
D	Switch			KR-2	SWE-20	76-2		Power Off-On
R2A	100K	1/2				B17-128		Balance, Left Channel
B	100K	1/2				M13-128		Balance, Right Channel
C	Shaft					SK1		

CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS (cont)

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA LEAK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R3A	500K			B-59	AD47-500K-S	Q11-133		Treble, Right Channel
B	500K			SR-59	Not Req.	M11-133	‡ UE1295	Treble, Left Channel
C	Shaft			Not Req.	FS-3	Not Req.		
R4A	5meg			B-87	AD47-5meg-S	Q11-141		Bass, Right Channel
B	5meg			SR-87	Not Req.	M11-141	†† UE4010	Bass, Left Channel
C	Shaft			Not Req.	FS-3	Not Req.		
R5A	100K			AB-40	AD47-100K-S	Q11-128		Extra, Right Channel
B	100K			SR-40	Not Req.	M11-128	* UE4011	Extra, Left Channel
C	Shaft			AK-1	RS-2	Not Req.		
R6A	100K			AB-40	AD47-100K-S	Q11-128		Tuner, Right Channel
B	100K			SR-40	Not Req.	M11-128	* UE4011	Tuner, Left Channel
C	Shaft			AK-1	RS-2	Not Req.		
R7A	100K			AB-40	AD47-100K-S	Q11-128		Pickup, Right Channel
B	100K			SR-40	Not Req.	M11-128	* UE4011	Pickup, Left Channel
C	Shaft			AK-1	RS-2	Not Req.		

† "STA-LOC" equivalent: FA15A, RU15A, CS3500, US42
†† "STA-LOC" equivalent: FA56L, RU56L, CS3500
‡ "STA-LOC" equivalent: FA55L, RU55L, CS3500
* "STA-LOC" equivalent: FA15L, RU15L, CS3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	LEAK PART No.	NOTES
R8	120K			
R9	4.7meg			
R10	220K 5%			
R11	1.8meg			
R12	1.8meg			
R13	4.7meg			
R14	50meg	1		
R15	50meg	1		
R16	50meg	1		
R17	50meg	1		
R18	2.2meg			
R19	10K			
R20	330K 5%			
R21	2.2meg			
R22	4700Ω			
R23	47K	1		
R24	330K 5%			
R25	330K 5%			
R26	330K 5%			
R27	2.2meg			
R28	10K			
R29	220K 5%			
R30	2.2meg			
R31	4700Ω			
R32	100K			
R33	100K			
R34	120K			

ITEM No.	RATING OHMS	RATING WATT	LEAK PART No.	NOTES
R35	4.7meg			
R36	220K			
R37	1.8meg			
R38	1.8meg			
R39	4.7meg			
R40	50meg	1		
R41	50meg	1		
R42	50meg	1		
R43	50meg	1		
R44	2.2meg			
R45	10K			
R46	330K 5%			
R47	2.2meg			
R48	4700Ω			
R49	47K	1		
R50	330K 5%			
R51	330K 5%			
R52	330K 5%			
R53	2.2meg			
R54	10K			
R55	220K			
R56	2.2meg			
R57	4700Ω			
R58	100K			
R59	100K			
R60	47K			

MISCELLANEOUS

ITEM No.	PART NAME	LEAK PART No.	NOTES
M1	Switch		Input Selector (Rotary Wafer Type)
M2	Switch		Function Selector (Rotary Wafer Type)
M3	Switch		Rumble, Max-Cut (Rotary Wafer Type)

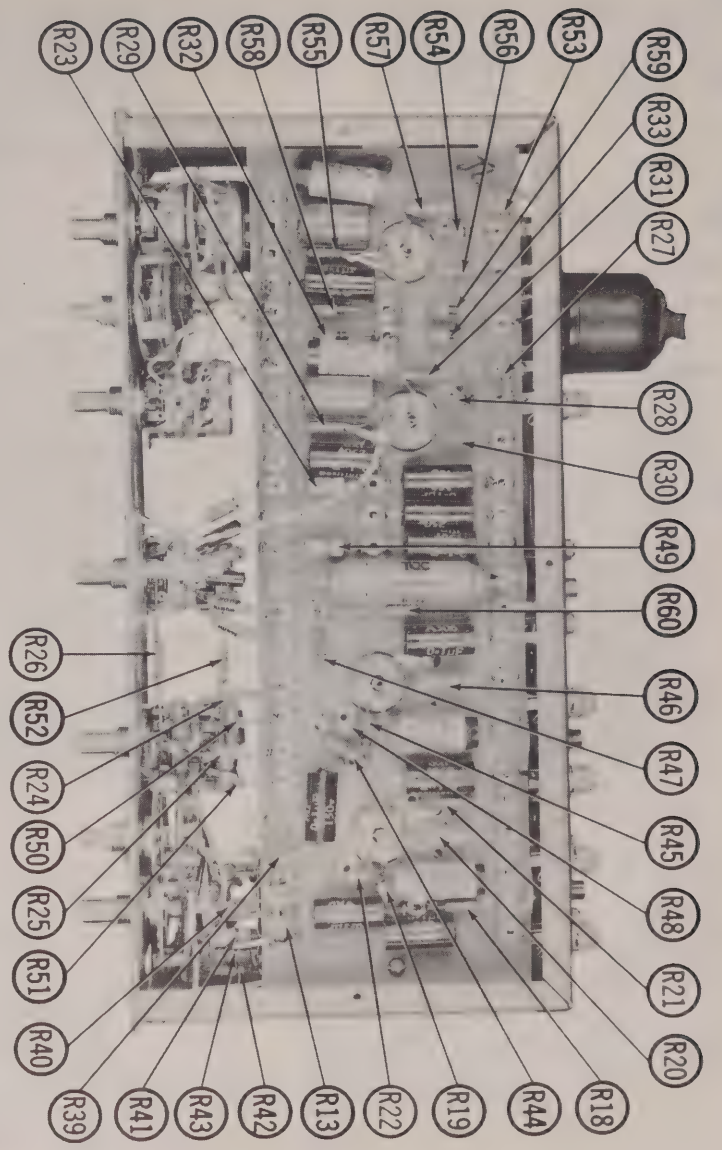
CABINETS & CABINET PARTS

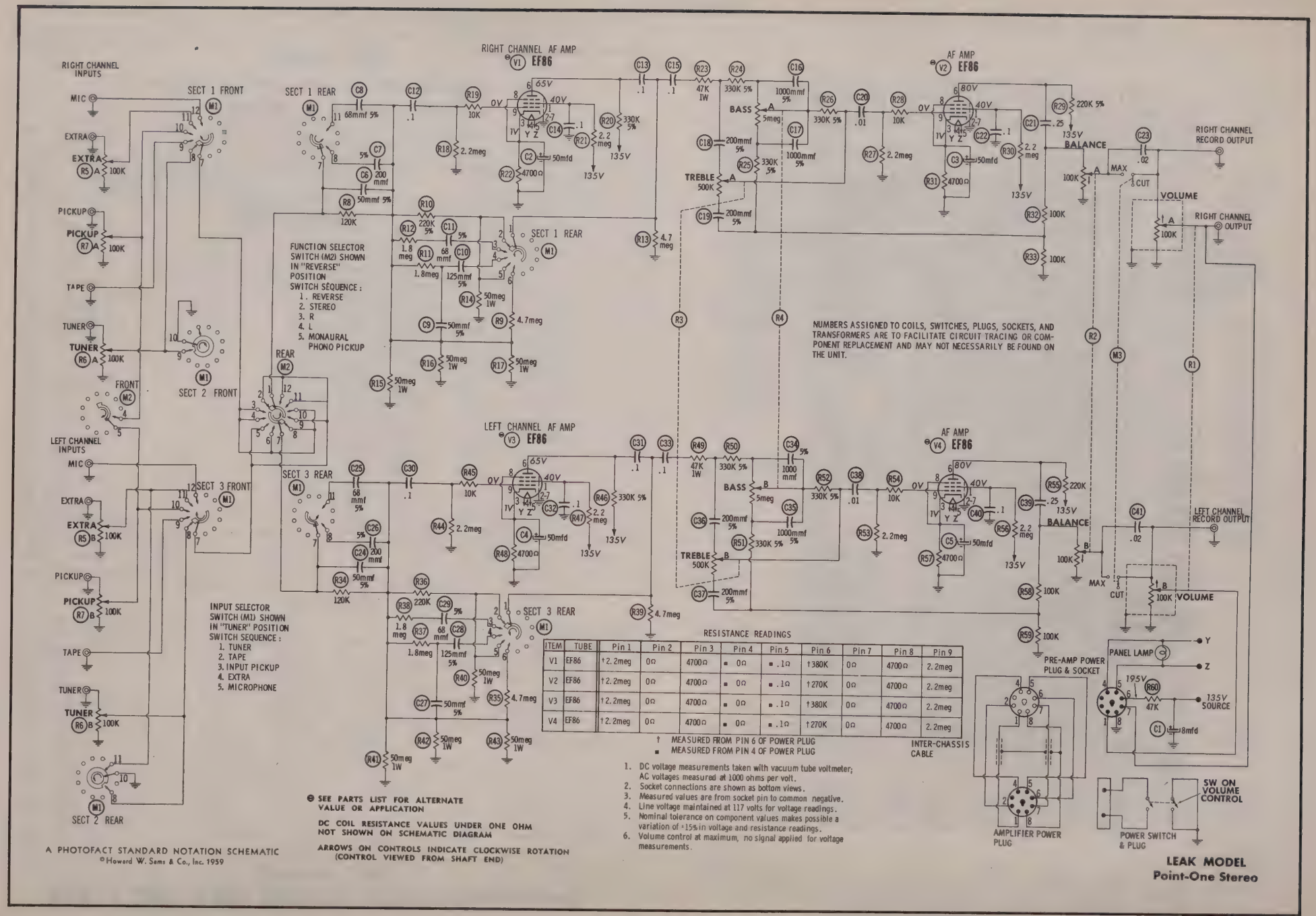
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	EF86	†2.2meg	0Ω	4700Ω	▪ 0Ω	▪ .1Ω	†380K	0Ω	4700Ω	2.2meg
V2	EF86	†2.2meg	0Ω	4700Ω	▪ 0Ω	▪ .1Ω	†270K	0Ω	4700Ω	2.2meg
V3	EF86	†2.2meg	0Ω	4700Ω	▪ 0Ω	▪ .1Ω	†380K	0Ω	4700Ω	2.2meg
V4	EF86	†2.2meg	0Ω	4700Ω	▪ 0Ω	▪ .1Ω	†270K	0Ω	4700Ω	2.2meg

† MEASURED FROM PIN 6 OF POWER PLUG
▪ MEASURED FROM PIN 4 OF POWER PLUG

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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LEAK MODEL
Point-One Stereo

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

LINMARK
MODEL T-62

LINMARK
MODEL T-62

LINMARK
MODEL T-62

TRADE NAME	Linmark Model T-62
IMPORTER	Shriro, Inc., 276 Fourth Ave., New York 10, N. Y.
TYPE SET	Battery Operated Portable Transistorized AM Receiver
POWER SUPPLY	9 Volts DC
TUNING RANGE—BROADCAST	525 – 1650KC
RATING	5.7MA @ 9 Volts DC (No Signal, Min. Volume) 7MA @ 9 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

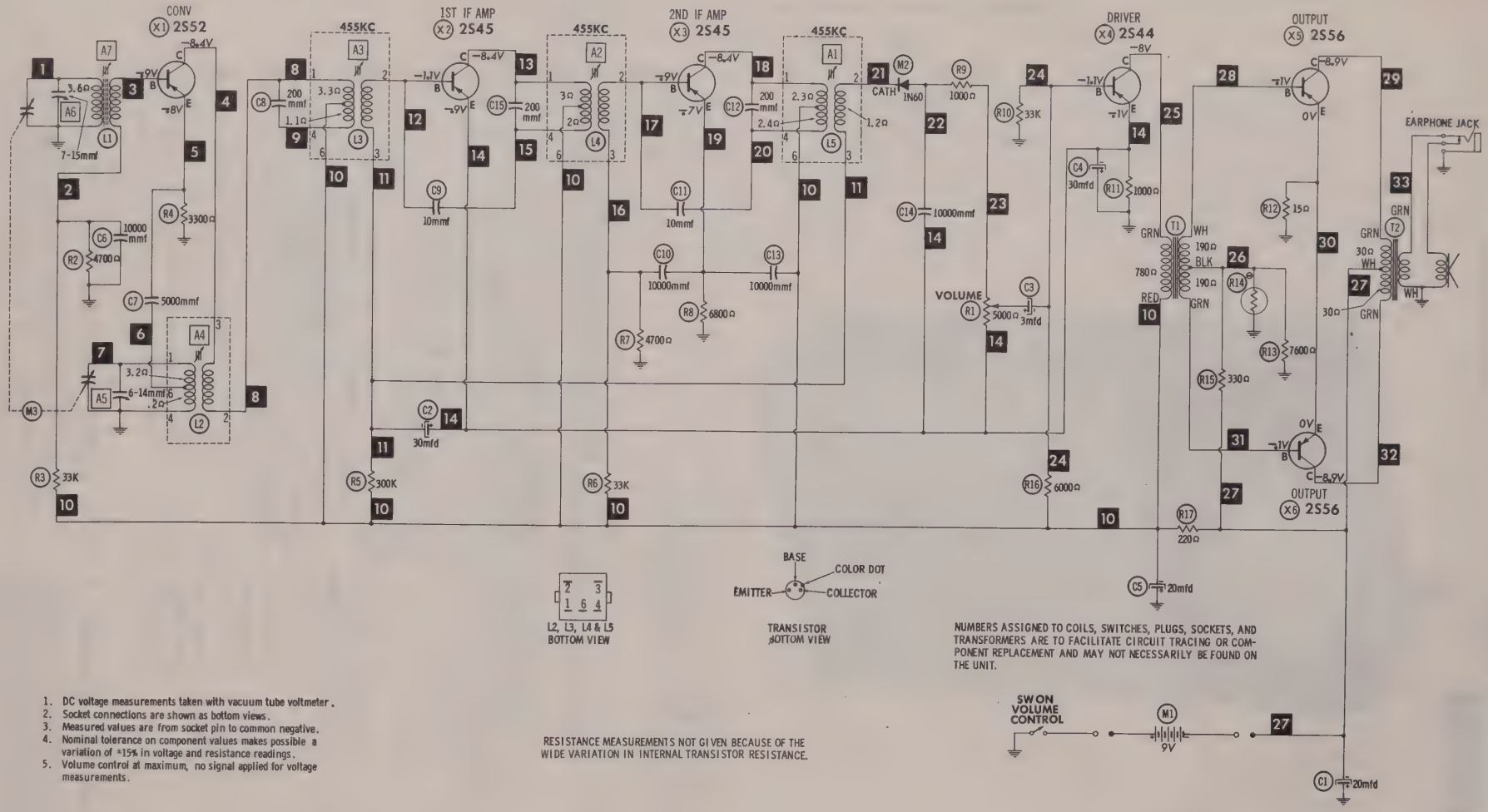
Suggested alignment tools:
A1 thru A4..... GENERAL CEMENT #8282, 8606, 8606L, 9091
WALSCO #2526, 2541, 2543, 2544
A5, A6..... GENERAL CEMENT #9087, 9089
WALSCO #2528

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.		Loop	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.		"	525KC	Tuning gang fully closed	"	A4	"
3.		"	1650KC	Tuning gang fully open	"	A5, A6	"
4.		"	650KC	650KC	"	A7	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 457 FOLDER 9



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

❸ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE®

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LINMARK MODEL T-62

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2S52	Converter			2N486		PNP
X2	2S45	1st IF Amplifier			2N483		PNP
X3	2S45	2nd IF Amplifier			2N482		PNP
X4	2S44	Driver			2N362		PNP
X5	2S56	Output			2N632		PNP } Matched
X6	2S56	Output			2N632		PNP } Matched

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	LINMARK PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	20	10		XPP10020		TT10X15		TE-1118	
C2	30	3		XPP3030	NLW25-3	TT3X25	ML25-3	TE-1092	
C3	3	6		PWE3003	NLW3-6	TT6X3	ML4-6	TE-1052	
C4	30	3		XPP3030	NLW25-3	TT3X25	ML25-3	TE-1092	
C5	20	10		XPP10020	NLW20-15	TT10X15		TE-1118	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	LINMARK PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C6	10000				BPD-01	DM-103	H-05S1	TA-110	TG-S10	
C7	5000				BPD-005	DM-502	H-05D5	TA-250	TG-D50	
C8	200				SI 200	DDM-201	L10T2	UC-532	5GA-T2	
C9	10				DI-10	DD-100	L10Q1	UC-541	5GA-Q1	
C10	10000				BPD-01	DM-103	H-05S1	TA-110	TG-S10	
C11	10				DI-10	DD-100	L10Q1	UC-541	5GA-Q1	
C12	200				SI 200	DDM-201	L10T2	UC-532	5GA-T2	
C13	10000				BPD-01	DM-103	H-05S1	TA-110	TG-S10	
C14	10000				BPD-01	DM-103	H-05S1	TA-110	TG-S10	
C15	200				SI 200	DDM-201	L10T2	UC-532	5GA-T2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	LINMARK PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4		B16-214				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		LINMARK PART No.	NOTES
	OHMS	WATT		
R2	4700Ω			
R3	33K			
R4	3300Ω			
R5	300K			
R6	33K			
R7	4700Ω			
R8	6800Ω			
R9	1000Ω			

ITEM No.	RATING		LINMARK PART No.	NOTES
	OHMS	WATT		
R10	33K			
R11	1000Ω			
R12	15Ω			
R13	7600Ω			
R14				Temp. Compensating
R15	330Ω			
R16	6000Ω			
R17	220Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		LINMARK PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick							
L2	Osc. Coil							
L3	1st IF Trans.							
L4	2nd IF Trans.							
L5	3rd IF Trans.							

PRINTED BOARD

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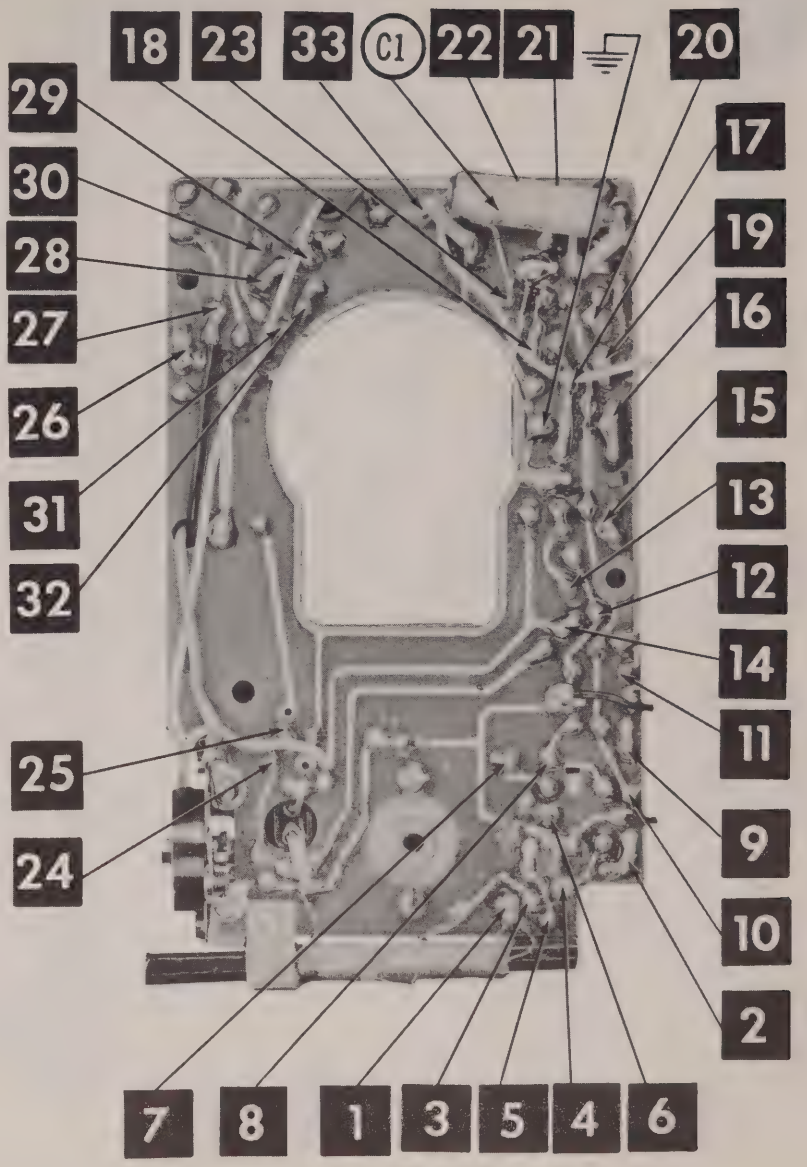


PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	LINMARK PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1							

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	LINMARK PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	500Ω CT	6-8Ω					TA-21			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	LINMARK PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	LINMARK PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	JIS006		2U6		216		TR-146R	

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		LINMARK PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60		1N60	1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	LINMARK PART No.	NOTES
M3	Tuning Cap.		2 Gang

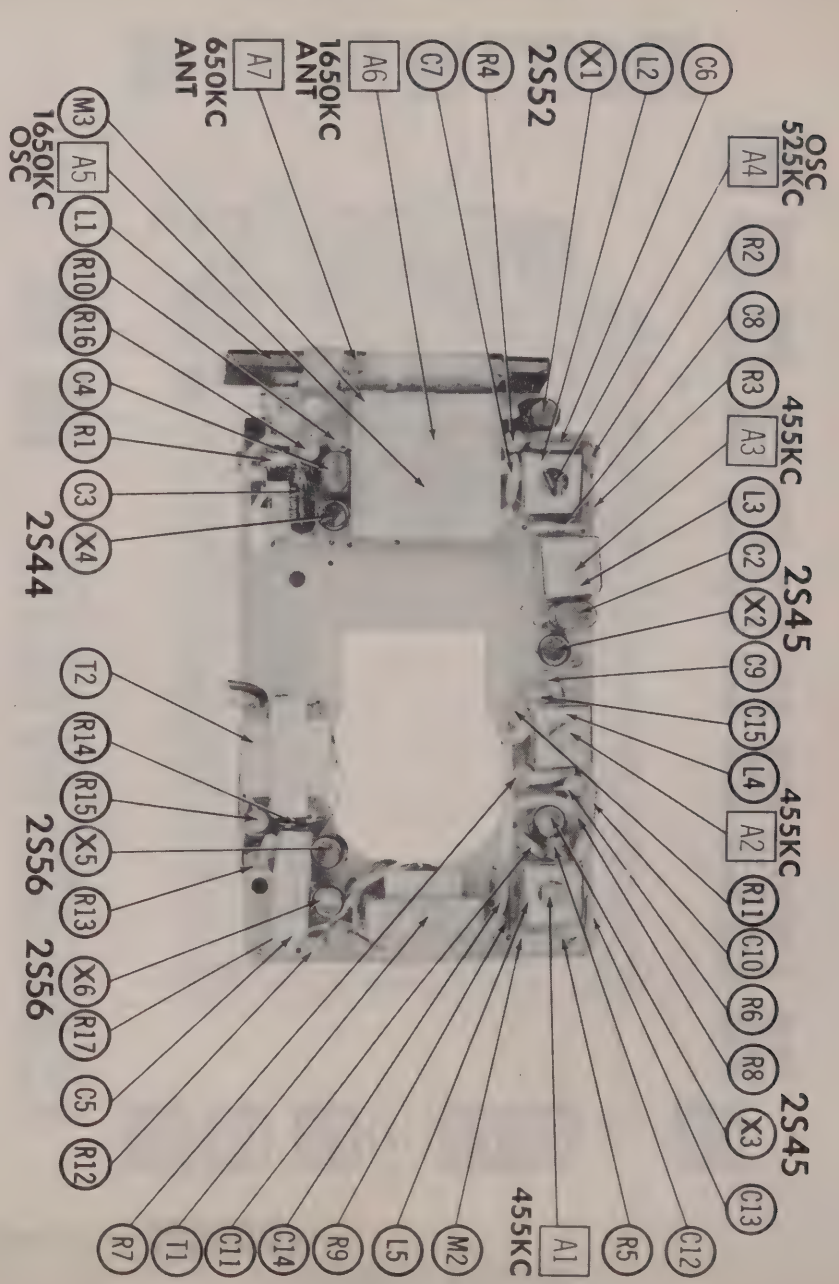
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

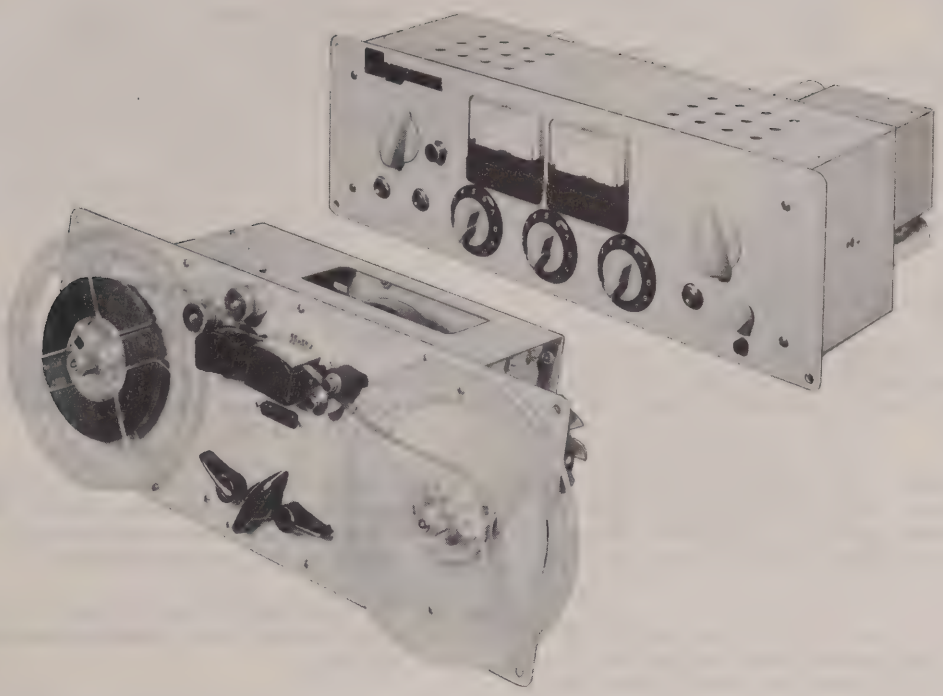
General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT* Folder

MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG



GENERAL INFORMATION

Magnecord Series 100 Magnecordette stereo tape recorders will record and play back in-line stereo.

The Model 102 Magnecordette is the basic recorder, without a portable carrying case. The Model 101 is the 102 in a portable carrying case. The Model 100-B, 100-T, or 100-W is the Model 102 basic recorder in a blonde, teak, or walnut cabinet, respectively. The Model 128-CG stereo center includes the equipment cabinet, speakers, accessory cabinet, and table.

The Magnecord Series 100 Magnecordette features Stop, Forward, Fast Forward, and Rewind modes of operation by a mere turn of a knob. Playback or Record is selected by a switch on the amplifier. Any reel size up to 7 inches can be accommodated. New recordings can be made on a previously recorded tape, since the erase head is automatically connected when the amplifier switch is in the Record position.

Manufactured by:

Magnecord Division
Midwestern Instruments Inc.
41st Street and Sheridan Road
Tulsa, Oklahoma

This material compiled and published by

HOWARD W. SAMS & CO., INC., INDIANAPOLIS 6, INDIANA

C402

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SPECIFICATIONS

Recording Speeds:

7 1/2 or 3 3/4 ips.

Input Impedance:

Two microphone inputs — High impedance for crystal or high-impedance microphone.

Two phono inputs — High impedance for crystal pickup or detector output of tuner.

Output:

Cathode follower

Motors:

Shaded pole, 117 volts, 60 cycles AC

OPERATING INSTRUCTIONS

Threading the Tape

1. Remove reel retainer knobs (1) from right-hand spindle (2) by pushing the reel retainer knob in and turning it counterclockwise to release the bayonet pins.

2. Place an empty reel on the spindle, with the small projection from the spindle hub plate between the spoke openings of the reel. Replace the reel retainer knob to hold the reel firmly in place.

3. Place a reel of tape on left-hand spindle (33). The tape should unwind from the top when the reel is turned clockwise, the coated or dull side facing down.

4. Pass the tape over the top guide roller, down and back around the lower guide roller, over the heads — by lifting head shield (8) and placing the tape underneath — and then between capstan (6) and pressure roller (4).

5. Insert the end of the tape into the hub slot of the right-hand reel, and wind at least two full turns of tape onto the reel.

To Make a Recording

1. Turn on the unit by turning the On-Off switch to On.

2. Set the Equalization switch in either the Fast (7 1/2 ips) or Slow (3 3/4 ips) position, depending upon the tape speed desired.

3. Set the Record-Play back switch to Record. This will switch on the phono and mike inputs to the amplifier, and will set the circuits for recording.

NOTE: The Safety switch must be depressed before the Record-Playback switch can be moved from one position to another.

4. The recorder is equipped with a Monaural-Stereo switch on the front panel. During a monaural recording, the channel - 1 mike or phono input should be employed. The record level will register on the left-hand VU meter.

CAUTION: When making a monaural recording, be sure the Monaural-Stereo switch is in the Monaural position. Otherwise, the level of any recording on the adjacent track will be reduced.

5. Adjust the three Volume controls so that the peaks of volume will deflect the VU meter M16 or M17 to 3 VU.

6. Turn the Function control to Forward. The small Safety button below and to the left of the Function control must be depressed before the knob can be placed in the Forward position.

7. The recorder will now record. The red Record pilot light will go on, showing that the unit is recording.

8. The recording may be monitored at the Monitor jack with headphones, or may be heard through the amplifier and speaker combination.

9. After the recording is completed, turn the Function control to Stop.

To Rewind Tape

1. To rewind the tape, turn the Function control to Stop. Place the tape over the top of head shield (8), to avoid excessive wear on the head.
2. Turn Function control to Rewind position. The Function control may be turned to Stop any time during rewind without danger of tape spillage.

CAUTION: When switching from Rewind to Forward, always pause in the Stop position long enough for the tape to stop completely. Otherwise, the tape will break because of the tight grip exerted by the capstan and pressure roller in the Forward position.

To Play Back a Tape

1. Thread the tape (see "Threading the Tape").

2. Set the Record-Playback switch to Playback.

NOTE: The red Record pilot light should not go on during play back.

3. Start the tape by turning the Function control to Forward.

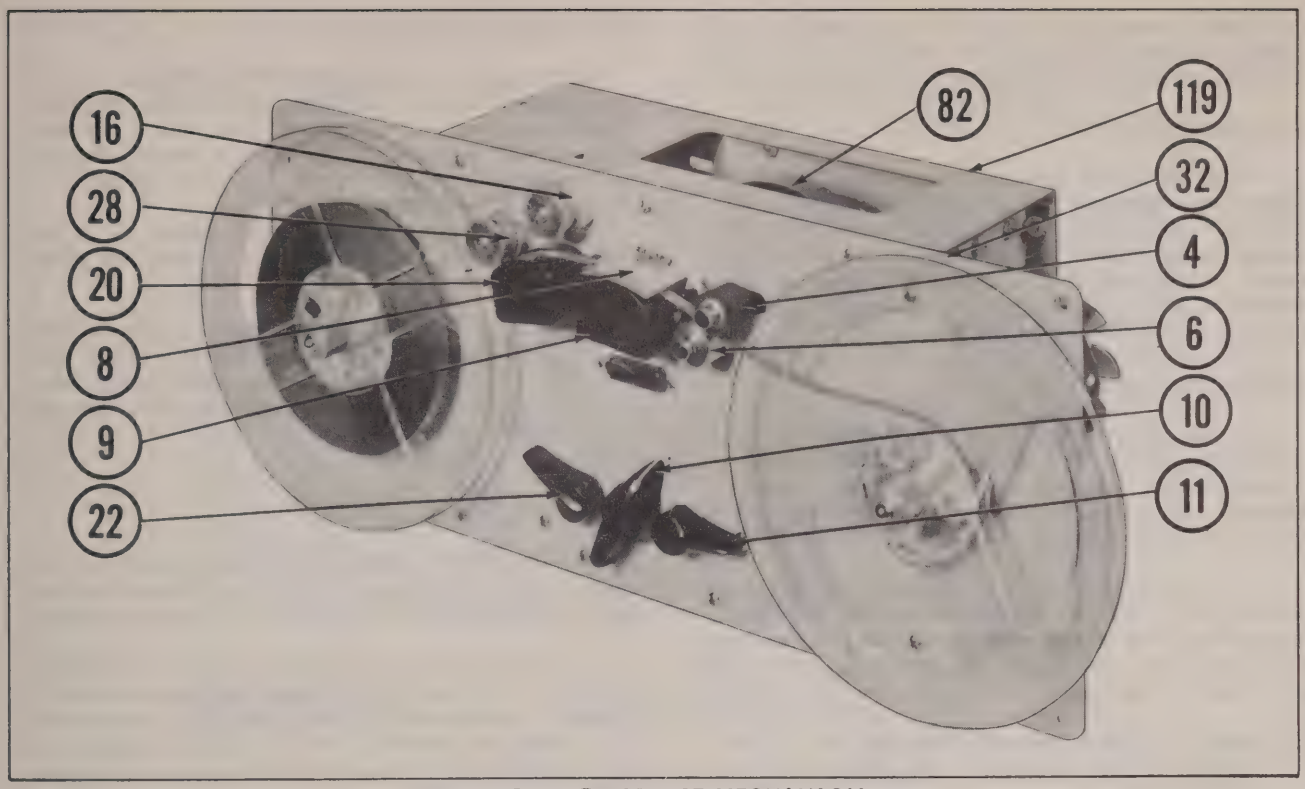


FIG. 1 TOP VIEW OF MECHANISM

4. Adjust the Volume controls for the desired volume and balance of the two channels.

NOTE: If the playback is distorted, the recorder volume may be too high. Lower the recorder volume, and raise the volume of the radio or amplifier. The position of the Equalization switch does not affect the playback.

To Erase a Tape

To erase a recorded tape, set the Record-Playback switch to Record, disconnect the inputs, and turn the Function control to Forward.

NOTE: It is not necessary to erase a recording before making a new one. The erase head is activated in the Record position, and automatically erases the tape before it reaches the recording head.

Hi-Speed Forward

The Hi-Speed Forward control is the knob marked Hi on the right side of the unit. When this knob is turned, a large puck engages the take-up reel shaft and drives it at eight times the normal capstan or drive speed. This rapid speed permits faster cueing or editing of a recorded tape. The Hi-Speed Forward control is spring-loaded, so that the more it is depressed, the faster the high-speed forward action. Before turning the Hi-Speed Forward knob, be sure the Function control is in the Stop position.

CAUTION: When going from Hi-Speed Forward to standard Forward, be sure the tape has stopped before the capstan and pressure roller are closed.

To Change Speeds

Two sets of capstans and pressure rollers permit two-speed operation of the recorder. The smaller capstan and larger pressure roller provide the 3 3/4-ips tape speed; the larger capstan and smaller pressure roller, the 7 1/2-ips tape speed. To change the capstans and pressure rollers, merely remove the knurled screws holding them in place, slip off the capstan and pressure roller and drop in the new ones. The surfaces of the shaft and capstan bore must be extremely clean; otherwise, the capstan and pressure roller will not fit properly.

INPUT AND OUTPUT CONNECTIONS

These units will record from one or two microphones, or from the output of a radio tuner or phonograph crystal pickup. For highest fidelity, the connecting cords between the unit and the tuner or phono should not be over ten feet long.

To Connect a Microphone

Any high-impedance microphone can be used. Select a low-capacity, shielded microphone cable. The shorting-type microphone connector silences the

microphone preamplifier when no microphone is used. Insert the microphone connector into the input marked Microphone Channel 1 or 2, on the left side of the panel.

To Connect a Tuner

To record from a radio tuner, connect the tuner to the Phono input on the rear connector plate. The connector is the EIA pin type. If the tuner has several output connections, use the one marked Detector. A well-shielded, low-capacity cable is recommended between the tuner and recorder, and the pin plugs should be soldered to the cable.

To Connect a Radio

To record from a radio, connect the voice-coil leads of the speaker to the Phono input of the recorder. On most radios, one side of the voice coil-circuit is grounded. Therefore, it may be necessary to reverse this connection once in order to obtain proper operation.

The Phono input of the recorder may be connected directly across the volume control of the radio. On some types of radios, this connection will be more satisfactory than the voice-coil method, and can be left attached at all times.

CAUTION: To prevent shock or damage, use proper isolation when connecting the recorder to an AC-DC radio.

To Connect a Phonograph

The output from most crystal pickups may be connected directly to the Phono input of the recorder if the connector is equipped with an EIA pin-type plug. Thus, disc recordings from a record changer or phonograph turntable can be copied onto a tape.

If the phonograph contains a magnetic — or reluctance-type pickup, a preamplifier must be used.

NOTE: The Phono and Mike inputs are automatically disconnected during playback. Therefore, the unit can be permanently connected at any point in the installation without affecting the operation of other units.

To Connect Monitor Outputs

A standard Phono jack, marked Monitor, is mounted on the front panel. Any type of high-impedance earphones can be used during record or playback.

The output is connected by means of a cord with an EIA pin-type connector at one end and with a connector suitable to the power amplifier on the other end. This pin connection will fit either connection. Since the output operates at all times, the output connection can be used for monitoring during a recording.

MECHANICAL OPERATION

Flywheel and Capstan

The balanced flywheel, and drive hub and capstan shaft assembly (82) are driven by two rubber-tired wheels (65) and (68) to provide a constant tape speed.

Pressure Roller

Pressure roller (4) is actuated by the Function control, through switch control shaft (92) and pressure roller arm assembly (77). The tension spring keeps a positive pressure against the tape and the capstan, so that the tape travels at a constant speed.

Fast Forward

Turning the Hi-Speed Forward knob clockwise actuates control shaft and wire (76), pivot arm (51), wire (50), and fast forward wheel mounting bracket (48). As a result, fast forward wheel (54) is pulled into contact with the drive motor shaft and with take-up hub (37). Simultaneously, pivot arm (51) moves against fast forward actuating switch M15; and main drive motor (127) is turned on.

Rewind

Turning the Function control to Rewind actuates switch M14 and starts rewind motor (138). Rewind link (95) is also actuated during rewind and pulls forward idler wheel (57) away from take-up hub (39), so that bearing-mounted take-up spindle shaft (2) can turn freely. When the Function control is returned to Stop, rewind link (95) is disengaged. Forward idler wheel (57) contacts take-up hub (39) and applies a breaking force sufficient to stop the reel.

The one-way, pawl-actuated clutch on the rear shaft extension of rewind motor (138), inparts a drag to the motor shaft as the tape unwinds from payoff spindle (33). This drag is transmitted to the tape as tension. During rewind, pawl (105) is disengaged from ratchet disc (111) by direction-sensitive rewind pawl spring (110). The motor shaft can now turn freely, and the tape rewinds rapidly.

Drive System

The drive system is driven by main drive motor (127), through two rubber-tired wheels (65) and (6 8) on sliding suspension arm supports (85) and (87). Idler wheels (65) and (68) are held against the hub of flywheel assembly (82) and the drive motor shaft by springs (69) and (84). This action drives capstan (6), which is secured to the flywheel shaft. Capstan (6) and pressure roller (4) then move the tape at a constant speed.

Take-Up System

Take-up spindle shaft (2) is driven by forward idler wheel (57), and contacts the drive motor shaft and take-up hub (39). Take-up hub (39) is concentrically mounted on take-up spindle shaft (2), and is coupled to the shaft by means of clutch assembly (36) through (44) (similar to the one in the rewind system). When the tape is properly threaded and the mechanism is in Forward, take-up spindle shaft (2) slips because of the pressure applied to the tape by the slower-turning capstan and pressure roller. Consequently, tension imparted to the tape prevents throwing or stalling of the tape as it goes from one reel to the other.

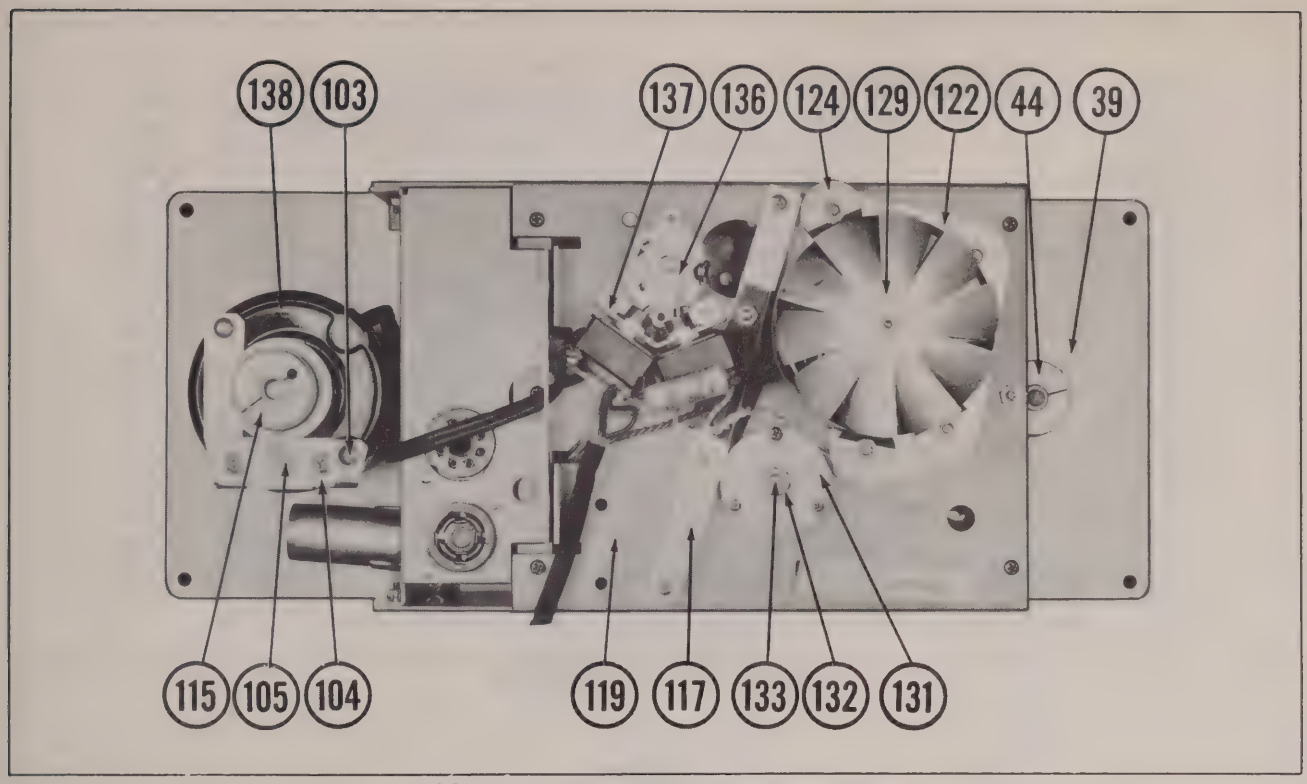


FIG. 2 BOTTOM VIEW OF MECHANISM

ADJUSTMENTS

Head Alignment

The primary purpose in head alignment is to provide maximum frequency response.

NOTE: If the frequency response is poor, make certain the difficulty is not due to tape coating residue on the pole surfaces.

The right mounting screw of the record-reproduce head is drawn up securely. This side of the head holder has a rocker action. Left adjustment screw (7) is associated with compression spring (21). Rotating this screw changes the gap alignment. The alignment is correct when, at a given setting of the gain control, maximum signal is reproduced from an alignment tape as alignment screw (7) is turned in or out.

Clutch Adjustment

Two friction clutches maintain the tape tension. If they are adjusted correctly, the tape will be taken up in either direction without throwing or stalling.

The clutches are on the rear of supply reel spindle (33) and take-up reel spindle (2). The supply reel spindle clutch is at the right (as you face the rear of the unit). It consists of an oiled felt washer (112) pressing against knurled ratchet (111). Ratchet (111) is free to rotate clockwise, but prevented from turning counterclockwise by a spring-loaded pawl (105). Pressing against the opposite side of the felt washer is a sponge rubber pad (114). A split, knurled adjustment ring (115) contacts sponge rubber pad (114), and is locked in place by set screw (116). Set screw (116) must be backed off before knurled adjustment ring (115) can be turned. Rotating knurled adjustment ring (115) clockwise increases the clutch friction.

When the machine is in the Forward position, the supply reel spindle clutch should drag as the supply reel rotates. This drag should be such that it will stop the supply reel without permitting the tape to loop or throw when the Function control is turned from Forward to Stop. The amount of friction should be the minimum necessary to accomplish this, (3 to 4 inch-ounces).

Too much clutch friction will increase the tape drag until the tape will not run at the normal speed.

The take-up reel friction clutch is on the left (as you face the rear of unit). It looks like the other clutch, except that no pawl is employed. Also, set screw (43) must be backed off before the clutch is adjusted. The friction clutch of take-up reel spindle (2) couples the spindle to the synchronous motor drive when the Function-control is set to Forward. The clutch acts as a brake on the take-up reel when the take-up reel is almost completely full and the supply reel nearly empty. The clutch should also provide sufficient braking to maintain tape tension and prevent tape throw when the Function control is turned to Stop after the take-up reel has been rotating at high speed. The split knurled ring (44) should be adjusted to provide the minimum clutch friction (6 to 7 inch ounces) for these functions.

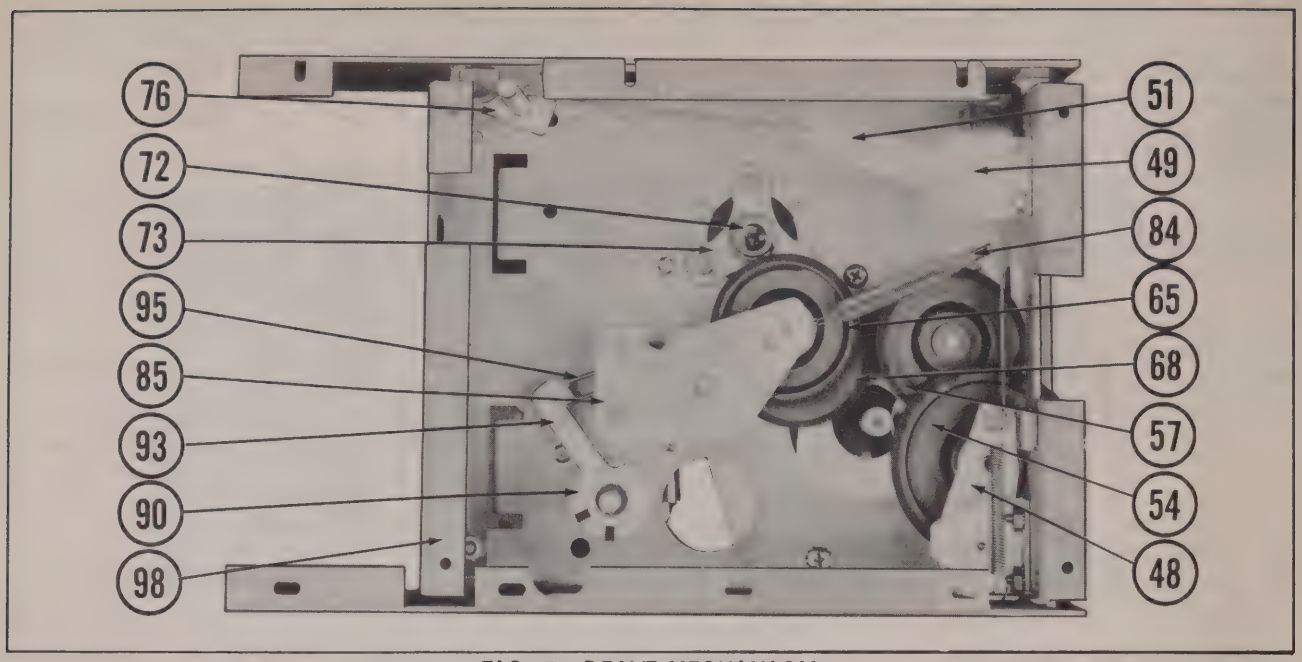


FIG. 3 DRIVE MECHANISM

CLEANING

Those portions of the erase head and the record-reproduce head which contact the tape must be kept free of dust, grease, and other foreign matter; otherwise, the frequency response characteristics will be poor. After every five hours of operation, clean them with a soft cloth slightly moistened with carbon tetrachloride or ethyl alcohol.

NOTE: Do not apply carbon tetrachloride to any part of the recorder while loaded reels are in place. Tape is soluble in carbon tetrachloride, and will be ruined if any of the liquid falls on the tape. After using carbon tetrachloride, make sure that the heads are completely dry before threading the tape and that none of the solution is transferred to the tape from the fingers. In addition, carbon tetrachloride fumes are toxic and should not be inhaled.

LUBRICATION

The motor should be lubricated with a few drops of #SAE 10 oil every three to six months, depending on the amount of use. All motors should be oiled at both the front and the rear.

After the pressure roller shaft has been cleaned with carbon tetrachloride (every three months), apply one drop of a light oil to the shaft. Do not oil the bearing surfaces.

Take-up bearing assembly (35) should be disassembled and the bearings packed with grease once a year. Felt washer (71) on the front and rear of capstan shaft (82) should be given three drops of light oil every six months.

NOTE: Do not allow any oil to accumulate on the rubber-covered idlers because it will cause slippage and impair tape speed regulation. Use a soft cloth moistened with carbon tetrachloride to remove any oil from idlers, drive hubs, or motor shaft.

MECHANICAL PARTS LIST

Ref. No.	Part No.	Description
1	91A5	Reel Hold-down assembly (2)
2	91A51	Take-up Shaft & Bayonet Spindle Assembly
3	61-4K5	4-36 x 5/16 Knurled H. M. S. Brass
4	91A14	7-1/2" Pressure Roller Assembly, 60 Cycle
		3-3/4" Pressure Roller Assembly, 60 Cycles

Ref. No.	Part No.	Description
5	61-4K6	4-32 x 3/8 Knurled H. M. S. Brass
6	75A16	7-1/2" Capstan, 60 Cycle
		3-3/4" Capstan, 60 Cycle
7	61-2F112	Screw Machine 2-56 x 3/4 Fil. Hd. Stl. N. P. (4)
8	78A572	Head Shield
9	91X2826	Record and Reproduce Head, and Housing Ass'y.

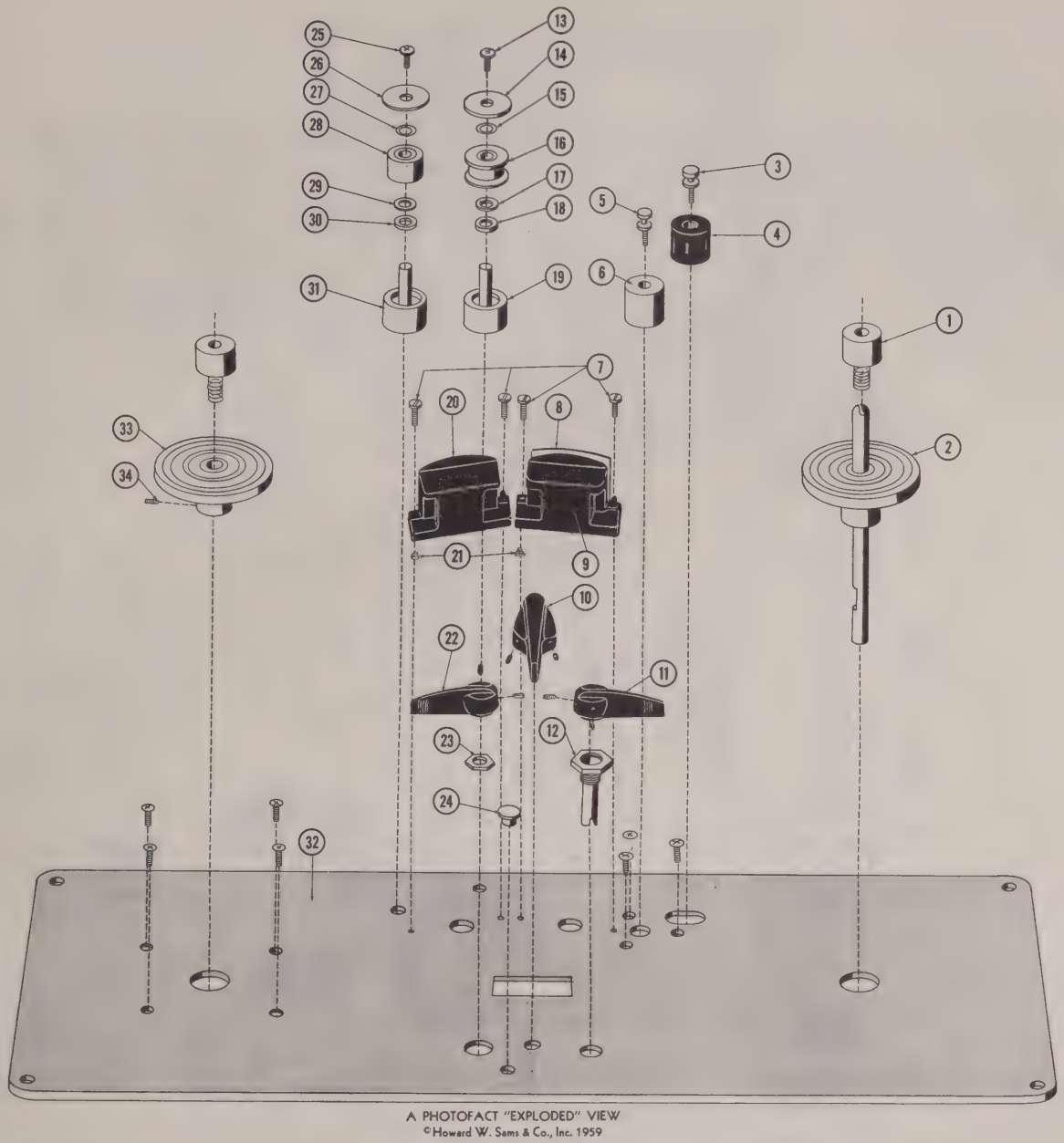


FIG. 4A EXPLODED VIEW OF PARTS ABOVE FRONT PANEL

MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
10	87A14	Function Control Knob
11	87A8	High Speed Forward Knob
12	75A37	Control Sleeve
13	61-4PB5	#4-40 x 5/16 Phillips B. H. M. S. St. N. P.
14	63A5	Dural Washer
15	63A28	Fiber Washer
16	91A10	Roller and Bearing Assembly
17	63A28	Fiber Washer
18	63X29	Felt Washer
19	75A11	Spacer
19A	76A8	Guide Roller Shaft

Ref. No.	Part No.	Description
20	91X2543	Erase Head and Housing Ass'y. Complete
21	77A25	Head Adjusting Spring (2)
22	87A8	Stereo-Monaural Control Knob
23	62-43H20	7/16-20 Hex Nut Alum.
24	75A96	Safety Knob
25	61-4PB5	4-40 x 5/16 Phillips B. H. M. S. St. N. P.
26	63A5	Dural Washer
27	63A28	Fiber Washer
28	91A49	Roller and Bearing Assembly
29	63A28	Fiber Washer

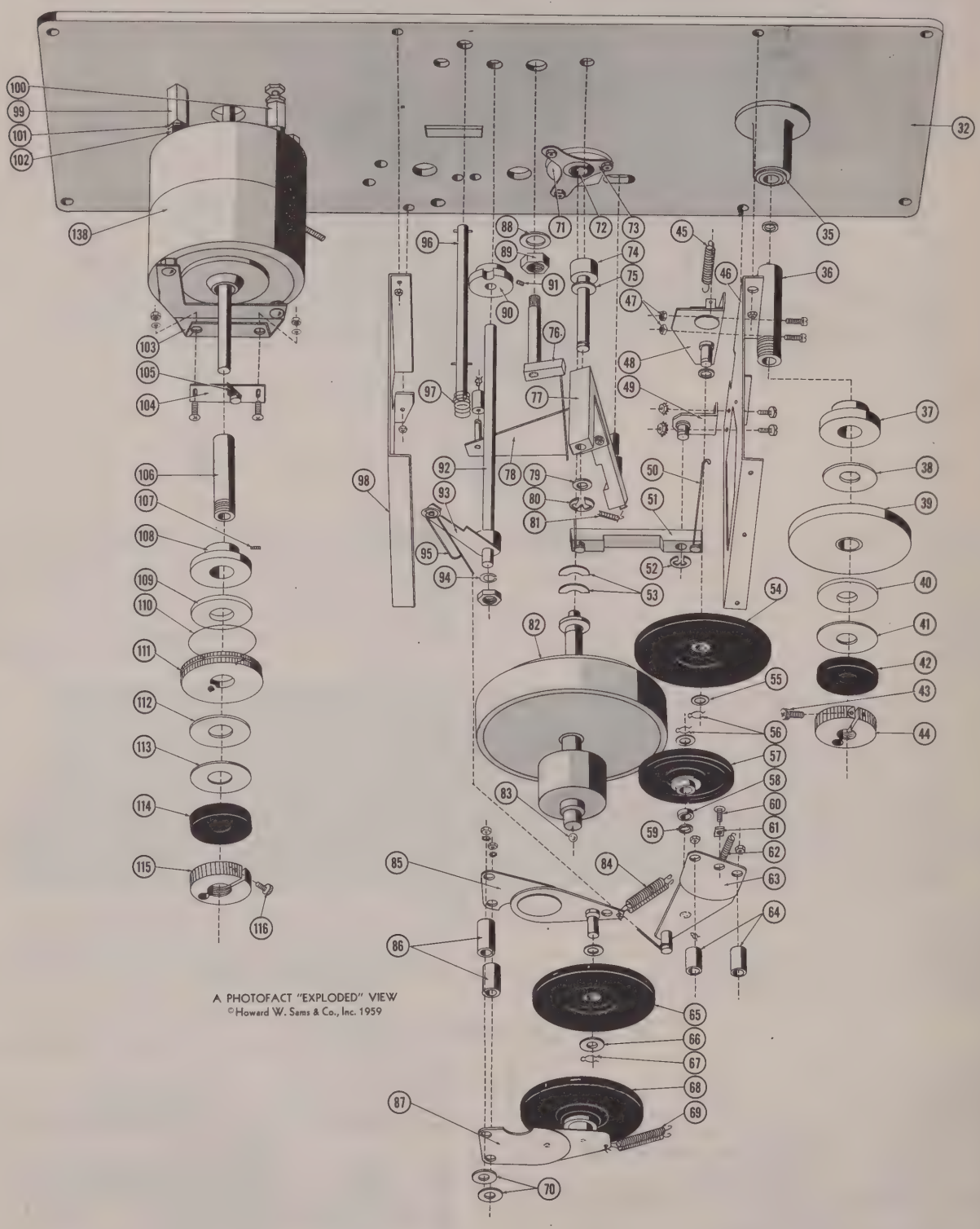


FIG. 4B EXPLODED VIEW OF PARTS BELOW FRONT PLATE

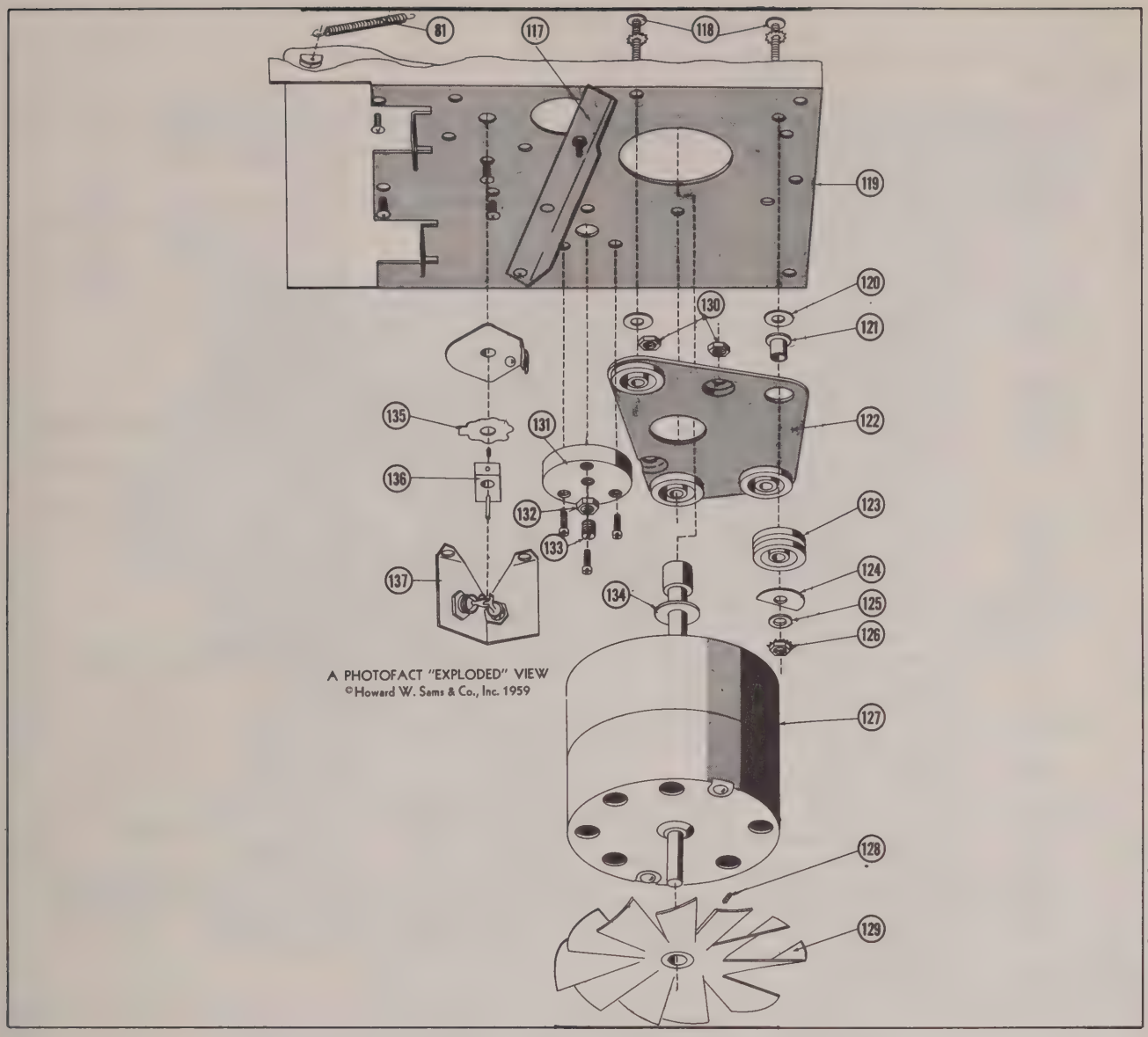


FIG. 4C EXPLODED VIEW OF PARTS BELOW BACK PANEL

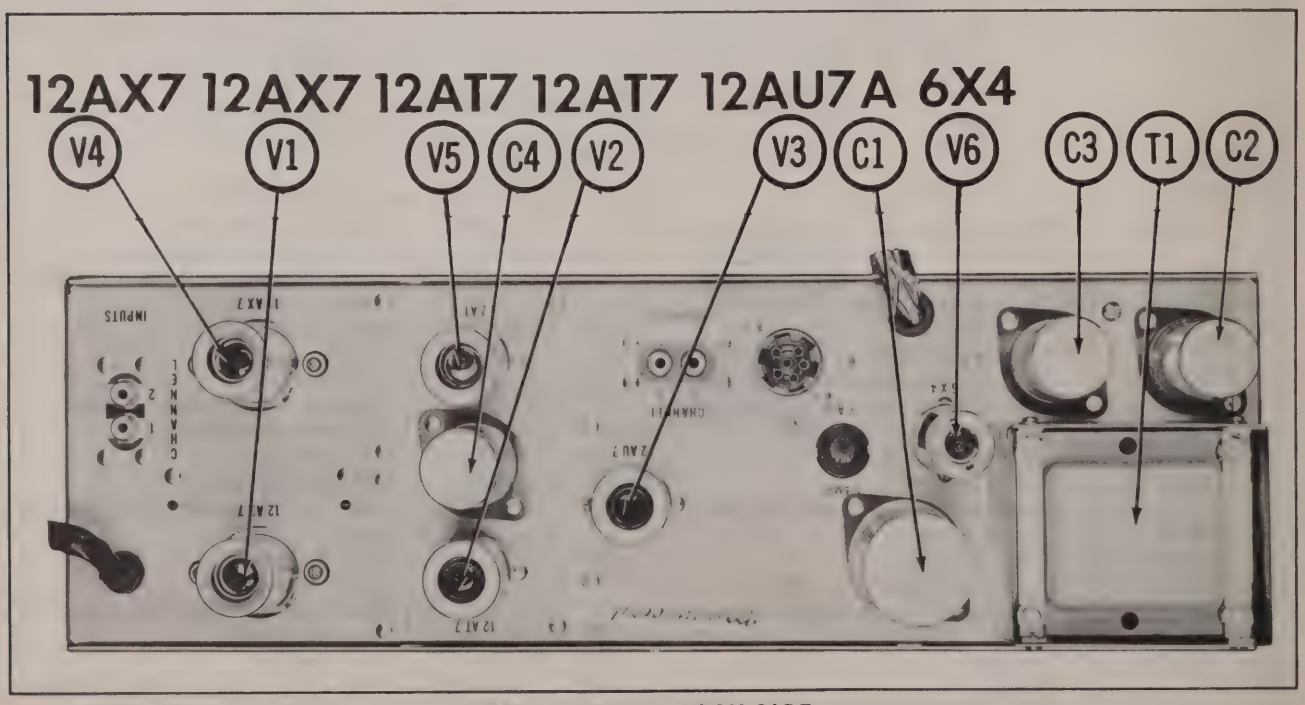
MECHANICAL PARTS LIST (CON'T.)

Ref. No.	Part No.	Description
30	63X29	Felt Spacer . 257 I. D. x 7/16 O. D. x 1/16 Th.
31	75A11	Spacer
31A	76A8	Guide Roller Shaft
32		Front Panel
33	91A82	Rewind Reel Flange Assembly
34	61-8SS3	3-32 x 3/16 Allen Hd. Set Screw
35	91A52	Take-up Bearing and Housing Ass'y.
36	75A63	Take-up Hub Tube
37	75A62	Take-up Hub Flange
38	63A9	Felt Washer
39	91A38	Take-up Wheel and Bearing Ass'y.
40	63A9	Felt Washer
41	63A10	Brass Washer
42	63A11	Rubber Washer
43	61-BCS8	8-32 x 1/2" Lg. Allen Hd. Cap. Screw
44	75A70	Locknut
45		Spring
46	71B41	Right-Half Side Panel

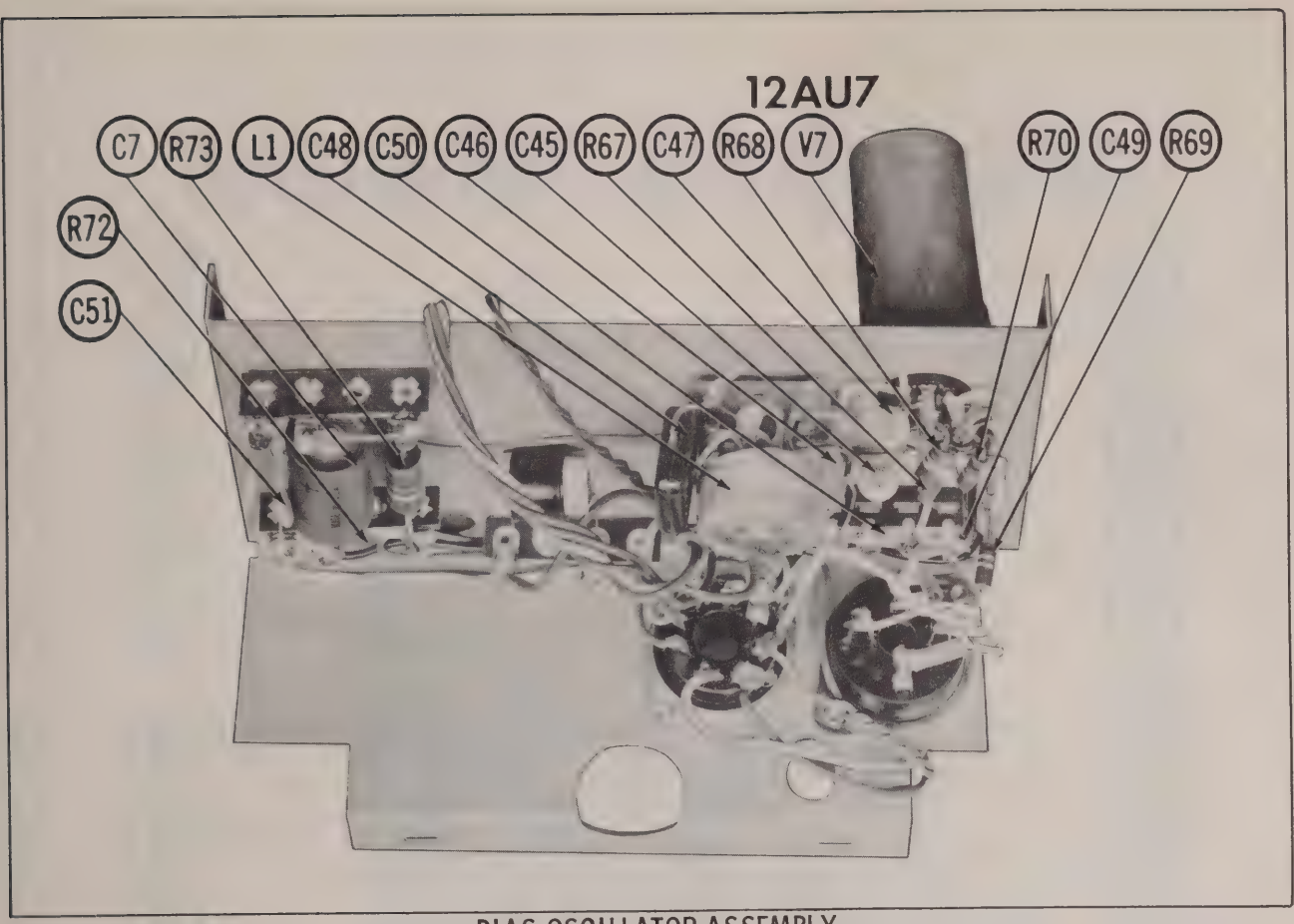
Ref. No.	Part No.	Description
47	62-6H4	6-32 x 1/4 Hex Nut
48	72A43	Bracket Lever Mounting
49	91A217	Lever Mounting Bracket and Stud Ass'y.
50	78A13	Wire Link Short
51	78A91	Lever
52		"C" Washer
53	63A98	Capstan Shaft Spring Washer
54	91A86	Drive Puck Assembly
55	63X19	Fiber Washer
56	67A12	Hairpin Retainer
57	6A91A927	Take-up Drive Puck and Bearing Ass'y.
58		Felt Washer
59		Fiber Washer
60	6A61-6CS6	#60-32 x 3/8 Allen Hd. Cap.Screw
61	6A72A179	Stop Bracket
62	6A77A4	Puck Spring
63	6A91A1229	Take-up Puck Arm Plate Ass'y.
64	6A75A44	Puck Plate Spacer-Short (2)

Ref. No.	Part No.	Description
65	9A91A927	Drive Puck and Bearing Assembly
66	6A63A19	Fiber Washer
67	6A67A12	Hairpin Retainer
68	9A91A927	Drive Puck and Bearing Ass'y.
69	6A77A4	Puck Spring
70		Washer
71	63A8	Felt Washer
72	74A21	Capstan Bearing
73	78A22	Bearing Retainer
74	76A2	Pressure Arm Shaft
75		Washer
76	91B736	Control Linkage Ass'y.
77	91A11	Pressure Arm Ass'y.
78	91A214	Pressure Arm Plate Ass'y.
79		Washer
80		"C" Washer
81	77A6	Pressure Arm Spring
82	91A1228	Capstan Shaft Ass'y.
83	78X28	Thrust Ball Bearing
84	77A4	Puck Springs
85	6A91A1244	Drive Puck Arm and Plate Ass'y.
86	6A75A289	Puck Plate Spacer-Long
87	6A91A1244	Drive Puck Arm and Plate Ass'y.
88		Control Sleeve Washer
89		Control Sleeve Nut
90	74A66	Pressure Roller Cam
91	61-6SS3	6-32 x 3/16 Allen Set Screw
92		Switch Shaft
93	43A101	Switch Detent Assembly
94		1/4" Tru-Arc Retaining Ring
95	78A180	Rewind Link
96	91A31	Safety Shaft and Pin Assembly
97		Safety Shaft Compression Spring
98	71B58	Left-Hand Side Panel
99	75A282	Spacer Rewind Motor (2)
100	91A918	Bumper and Spacer Ass'y. (2)
101		Rewind Motor Mounting Nut (4)
102	75A283	Motor Spacer

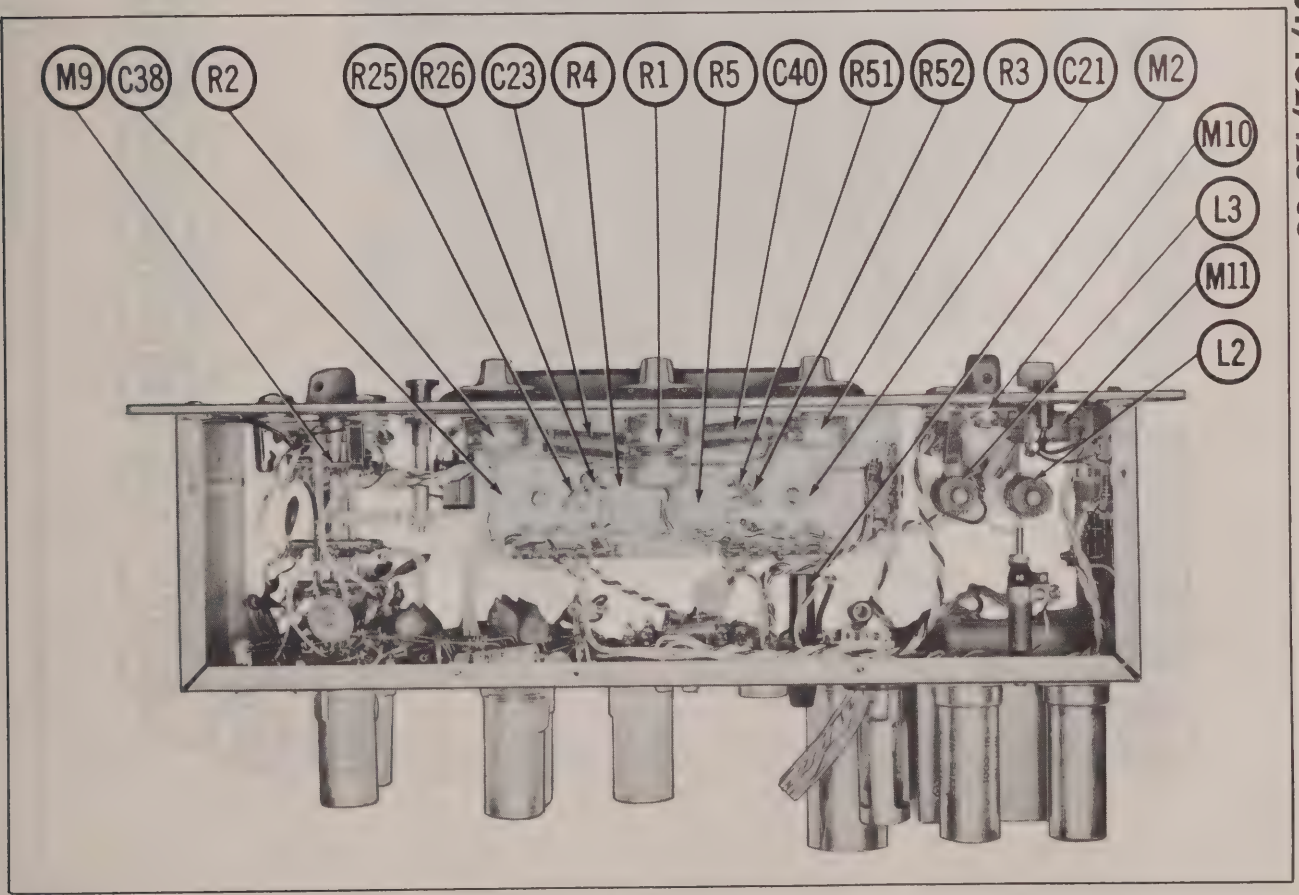
Ref. No.	Part No.	Description
103	72B169	Pawl Mounting Plate Bracket
104	71A319	Pawl Mounting Plate
105	71A87	Pawl
106	75A85	Rewind Hub Tube
107	61-8SS3	8-32 x 3/16 Allen Hd. Set Screw
108	75A84	Rewind Hub Flange
109	63A9	Felt Washer
110	77A2	Pawl Spring
111	75A86	Ratchet
112	63A9	Felt Washer
113	63A10	Brass Washer
114	63A11	Rubber Washer
115	91A70-10	Locknut Assembly
116	61-BCS8	8-32 x 1/2 Lg. Hd. Cap. Screw
117	6A72A50	Reinforcing Angle
118	61-8B16	#8-32 x 1" B.H.M.S. Stl. N.P.
119		Back Panel Assembly
120	63A180	Motor Shock Mount Washer (4)
121	75A323	Spacer Shock Mount (4)
122	71A482	Motor Mounting Plate
123	86A63	Shock Mounts (4)
124		Flat Washer (4)
125		Washer
126	63-8H11	8-32 Hex Nut Stl. W.P. (4)
127	35C54	Shaded Pole Motor, Howard Industries
128		Set Screw
129	78A201	Motor Fan
130		Hex Nut (2)
131	6A75A30	Thrust Housing
132	A62-25H720	1/4-20 Hex Nut
133	6A61A18	1/4-20 x 1/2 Set Screw
134		Felt Washer
135		Screw (3)
136	91A30	Switch Arm and Pin Ass'y.
137	6A72A3	Switch Bracket
138	35C30	Rewind Motor



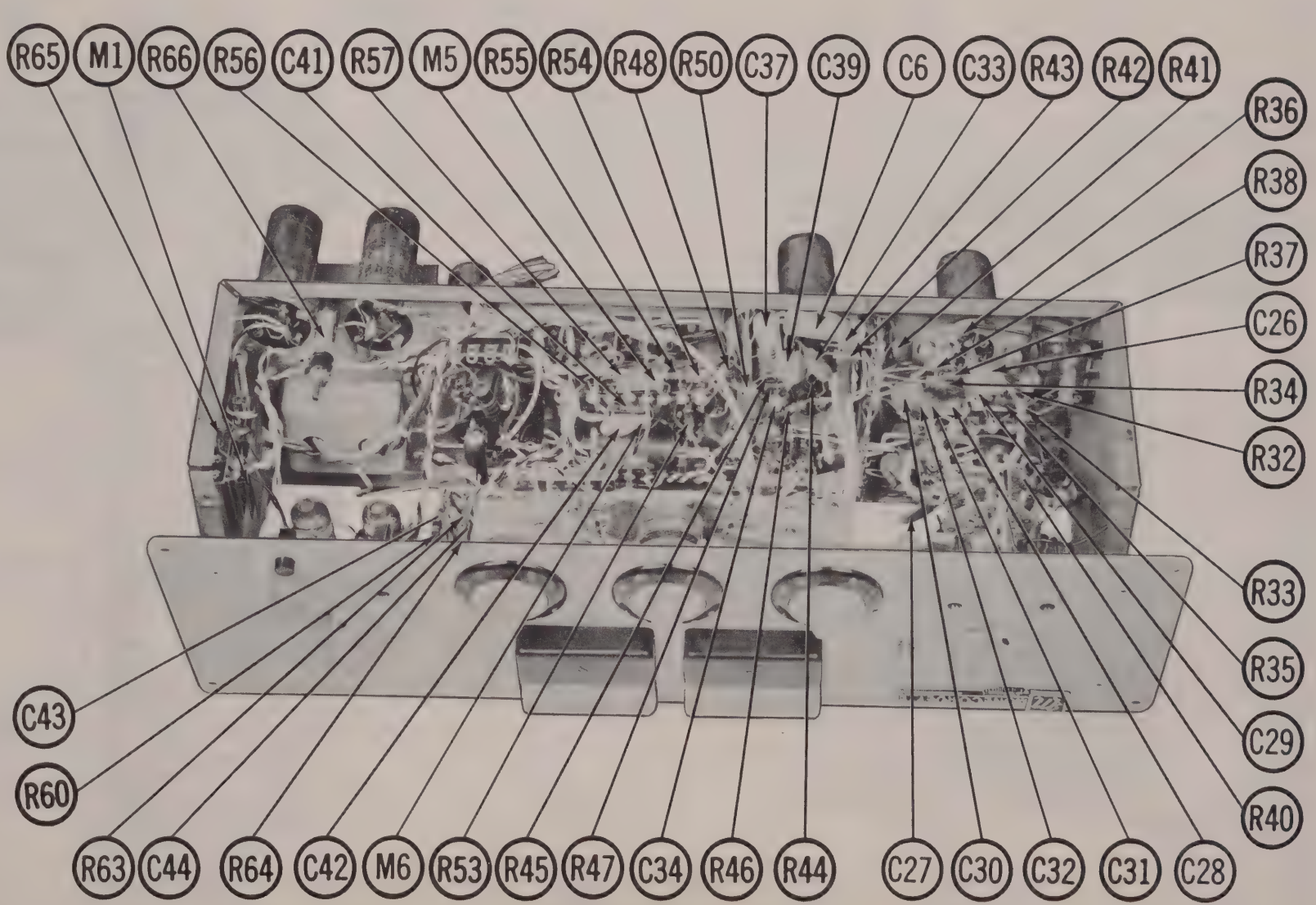
AMP CHASSIS - BACK SIDE



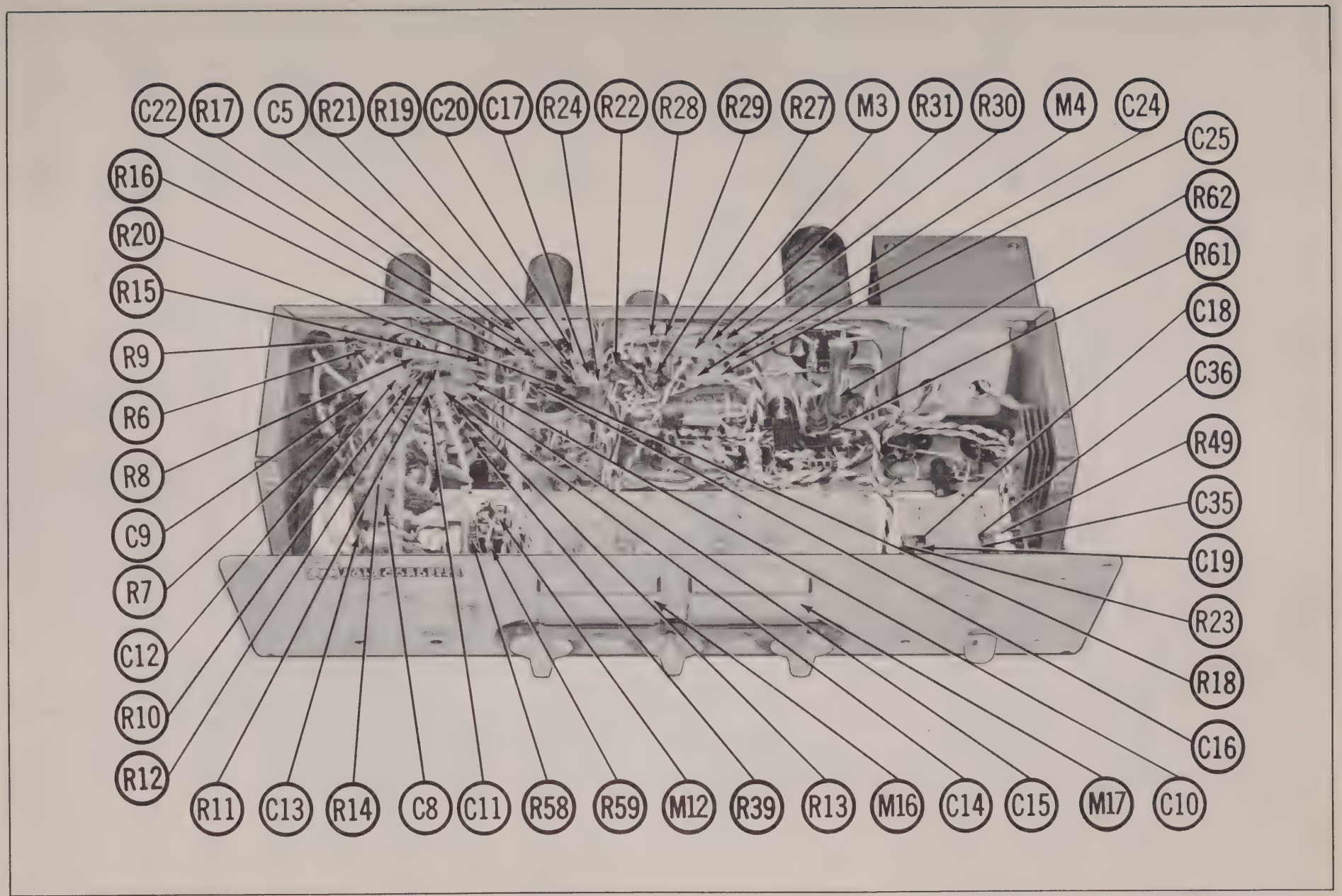
BIAS OSCILLATOR ASSEMBLY



ELECTRICAL CHASSIS - BOTTOM VIEW



ELECTRICAL CHASSIS - BOTTOM VIEW

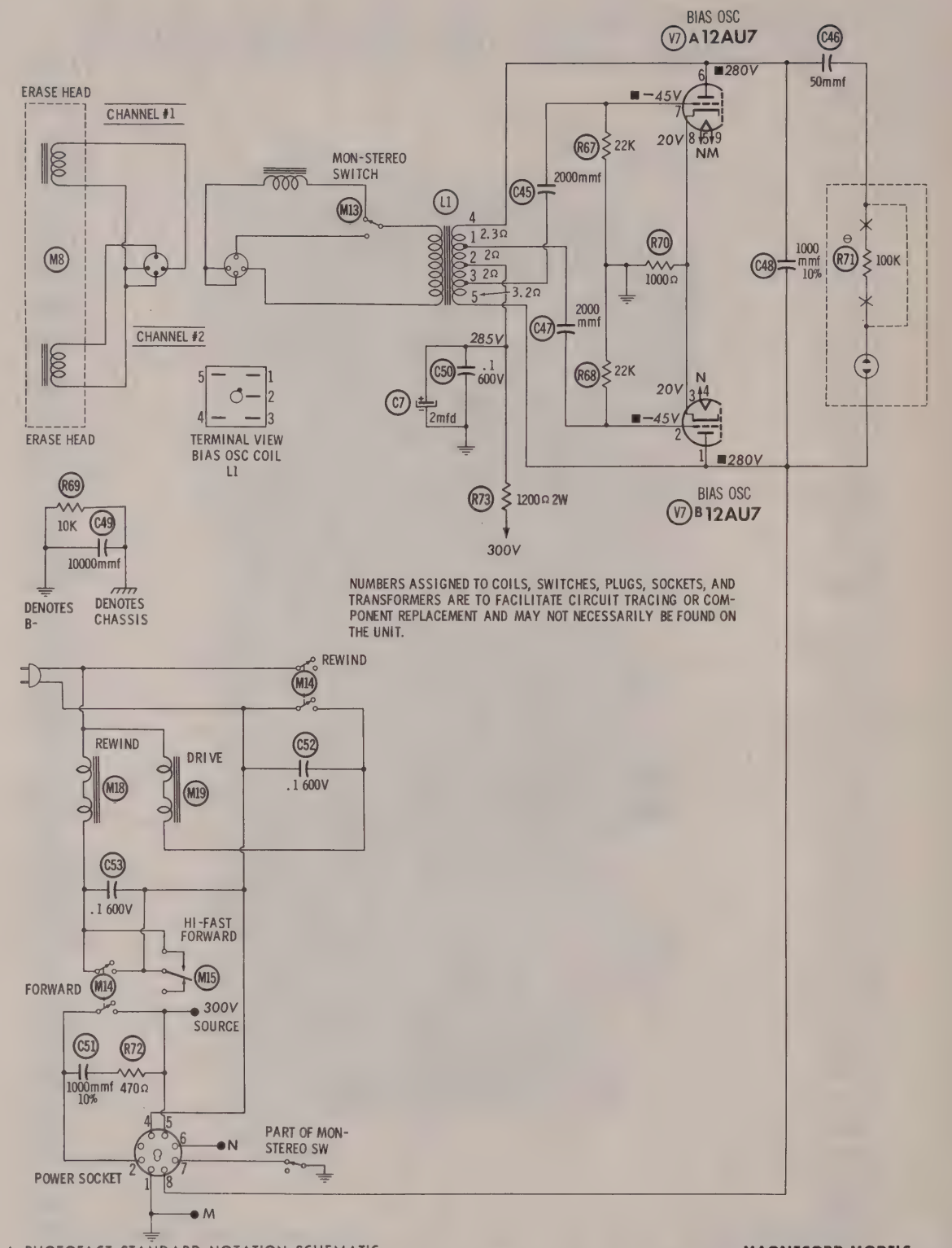


ELECTRICAL CHASSIS - TOP VIEW

MAGNECORD MODELS

100-B, -T, -W, 101, 102, 128-CG

FOLDER 10



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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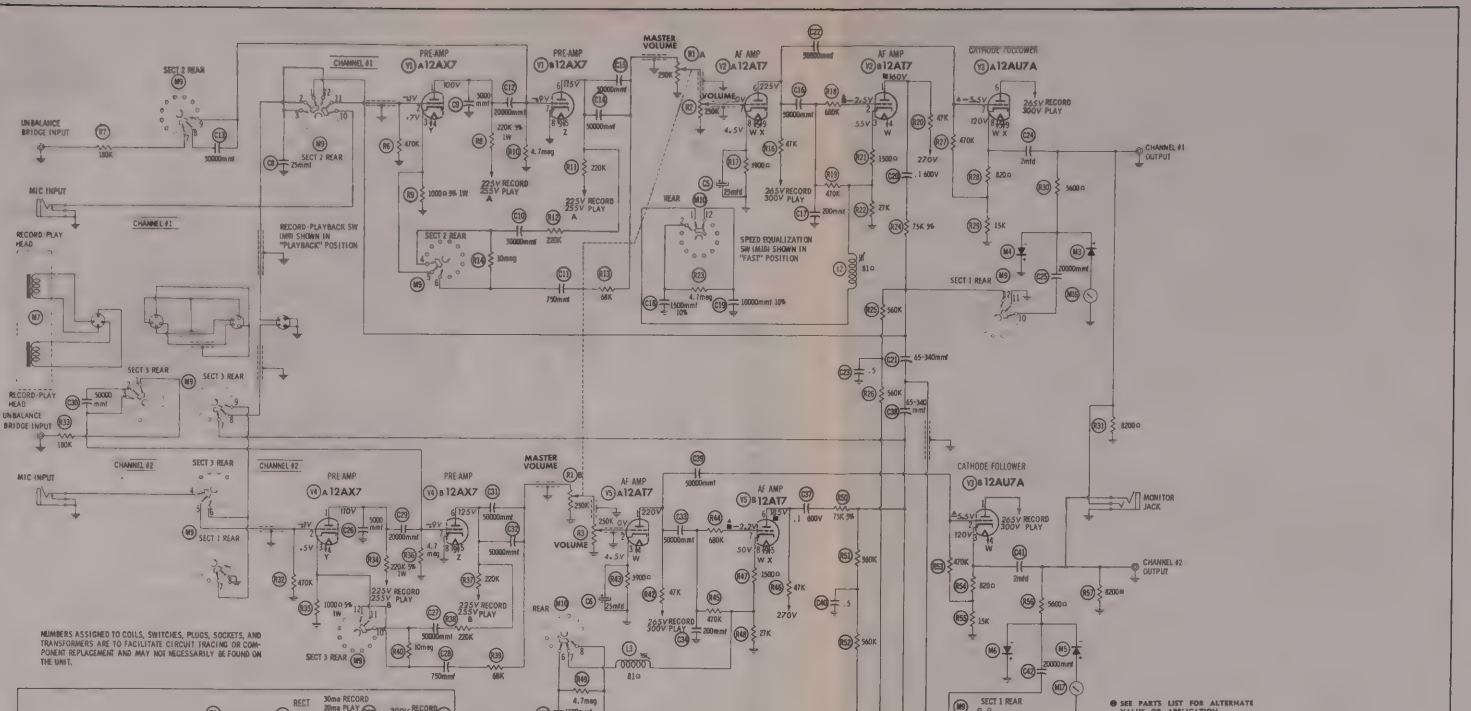
MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG

BIAS OSCILLATOR SCHEMATIC


MASTER VOLUME
PRE-AMP V1 a 12AX7
PRE-AMP V1 b 12AX7
AF AMP V2 A 12AT7
AF AMP V2 B 12AT7
CATHODE FOLLOWER V3 A 12AU7A
CHANNEL #1
CHANNEL #2
UNBALANCE BRIDGE INPUT
MIC INPUT
RECORD-PLAY HEAD
RECORD-PLAYBACK SW (AS SHOWN IN "PLAYBACK" POSITION
SPEED EQUALIZATION SW (AS SHOWN IN "FAST" POSITION
265V RECORD 300V PLAY
225V RECORD 255V PLAY
CHANNEL #1 OUTPUT
CHANNEL #2 OUTPUT
MONITOR JACK
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
RECT 6X4 V5
300V RECORD
265V RECORD 300V PLAY SOURCE
225V RECORD 255V PLAY A SOURCE
225V RECORD 255V PLAY B SOURCE
AUX POWER SOCKET
ON-OFF SWITCH
POWER PLUG TO BIAS OSC
SAFETY INTERLOCK SWITCH
270V SOURCE
NOISE ADJUST R4
NOISE ADJUST R5
TAPPED
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†260K	470K	1000Ω	280Ω	280Ω	†260K	4.7meg	0Ω	280Ω
V2	12AT7	† = 58K	1.1meg	28K	1Ω	1Ω	†50K	0Ω	3900Ω	0Ω
V3	12AU7A	†3400Ω	485K	16K	1Ω	1Ω	†3400Ω	485K	16K	0Ω
V4	12AX7	†260K	470K	1000Ω	280Ω	280Ω	†260K	4.7meg	0Ω	280Ω
V5	12AT7	†50K	0Ω	3900Ω	.1Ω	.1Ω	† = 58K	1.1meg	28K	0Ω
V6	6X4	190Ω	NC	.1Ω	0Ω	NC	200Ω	¶		
V7	12AU7	† = 2400Ω	22K	1000Ω	1Ω	1Ω	† = 2400Ω	22K	1000Ω	0Ω

ALL MEASUREMENTS TAKEN IN "PLAY" POSITION UNLESS OTHERWISE DESIGNATED.
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V6
= MEASURED IN "RECORD" POSITION
NC NO CONNECTION
▲ MEASURED FROM CATHODE

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative
4. Line voltage maintained at 117 volts for voltage readings
5. Nominal tolerance of component values makes possible a variation of ±10% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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MAGNECORD MODELS
100-B, -T, -W, 101, 102, 128-CG

ELECT. PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Ch. 1 Preamplifier	12AX7	
V2	Ch. 1 AF Amplifier	12AT7	
V3	Ch. 1 Cath. Follower-Ch. 2 Cath. Follower	12AU7A	
V4	Ch. 2 Preamplifier	12AX7	
V5	Ch. 2 AF Amplifier	12AT7	
V6	Rectifier	6X4	
V7	Bias Oscillator	12AU7	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MAGNECORD PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▰20	450	23X23	AFH4-14	D0130	FP444	TMQ-12	TVL-4763	
B	■20	450							
C	▲20	450							
D	20	450							
C2	500	25	23X19	AFH1-08	A0120	WP057	TMS-10	TVL-1220	
C3	1000	15	23X1	AFH1-02	A0060	WP039	TMS-4	TVL-1165	
C4A	▲10	450	23X47	AFH2-47	B0370	FP231	TMD-47	TVL-2750	
B	■10	450							
C5	25	25	23X12	PRS25V25	BBR25-25	TC26	TD-25-25	TVA-1205	
C6	25	25	23X12	PRS25V25	BBR25-25	TC26	TD-25-25	TVA-1205	
C7	2	450	23X4	PRS450V2	BR245	TC60	TD-2-450	TVA-1701	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MAGNECORD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C8	25			21X75	1469-000025	DD-250	22R5Q25	MC220	MS-425	
C9	5000			27X15	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C10	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C11	750			21X16	1469-00075	DD-751	22R5T75		MS-375	
C12	20000			27X13	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C13	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C14	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C15	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C16	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C17	200			27X6	BPD-0002	DD-201	L10T2	B-320	5GA-T2	
C18	1500		10%	21X33	1464-0015	DD-152	1R5D15	MCB256	MS-215	
C19	10000		10%	27X10	DI-10000	DD-103	PM6S1	JL-110	5GA-S1S 10%*	
C20	.1	600		28X7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C21	65-340			25X3						
C22	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C23	.5	200		22X97	P288N-5		CUB2P5	GEM-205	2TM-P5	
C24	2mfd	200		22X39	P2922N-2		WMF1W2E		118P20502S2	
C25	20000			27X13	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	

CAPACITORS (cont)

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MAGNECORD PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C26	5000			27X15	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C27	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C28	750			21X46	1469-00075	DD-751	22R5T75		MS-375	
C29	20000			27X13	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C30	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C31	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C32	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C33	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C34	200			27X6	BPD-0002	DD-201	L10T2	B-320	5GA-T2	
C35	1500		10%	21X33	1464-0015	DD-152	1R5D15	MCB256	MS-215	
C36	10000		10%	27X10	DI-10000	DD-103	PM6S1	JL-110	5GA-S1S 10%*	
C37	.1	600		28X7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C38	65-340			25X3						
C39	50000			28X5	BPD-05	DD-503	CUB6S5	GEM-615	5HK-S5	
C40	.5	200		22X97	P288N-5		CUB2P5	GEM-205	2TM-P5	
C41	2mfd	200		22X39	P2922N-2		WMF1W2E		118P20502S2	
C42	20000			27X13	BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C43	1000		10%	27X7	DI-1000	DD-102	PM6D1	JL-210	5GA-D1S 10%*	
C44	1000		10%	27X7	DI-1000	DD-102	PM6D1	JL-210	5GA-D1S 10%*	
C45	2000				BPD-002	DD-202	BYA10D2	B-220	5HK-D2	
C46	50				1469-00005	DD-500	22R5Q5	MC255	MS-450	
C47	2000				BPD-002	DD-202	BYA10D2	B-220	5GA-D2	
C48	1000		10%	27X7	1469-001	DD-102	22R5D1	MCB255	MS-21	
C49	10000			27X24	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C50	.1	600		28X7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C51	1000		10%	27X7	DI-1000	DD-102	PM6D1	JL-210	5GA-D1S 10%*	
C52	.1	600		28X7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C53	.1	600		28X7	P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MAGNECORD PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	250K	1/2	14A61	B-51	AD47-250K-Z	Q13-130	■	Master Volume, Channel 1
B	250K	1/2		SR-51	Not Req.	M13-130	■	Master Volume, Channel 2
C	Shaft			Not Req.	RS-2	Not Req.		
R2A	250K	1/2	14A60	B-51	A47-250K-Z	Q13-130	U44	Volume, Channel 1
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R3A	250K	1/2	14A60	B-51	A47-250K-Z	Q13-130	U44	Volume, Channel 2
B	Shaft			Not Req.	RS-2	Not Req.	Not Req.	
R4A	10K	1/2	14X45	AB-14	A47-10K-S	B11-116	U20	Noise Adjust, Channel 1
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	
R5A	10K	1/2	14X45	AB-14	A47-10K-S	B11-116	U20	Noise Adjust, Channel 2
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	

■ "STA-LOC" equivalent: FA254A, RU254A, CS3500

ELECT. PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	MAGNECORD PART No.	NOTES
R6	470K		11X4	
R7	180K		11X37	
R8	220K 5%	1	13X71	
R9	1000Ω 5%	1	13X70	
R10	4.7meg		11X142	
R11	220K		11X121	
R12	220K		11X121	
R13	68K		11X74	
R14	10meg			
R15	39K		11X65	
R16	47K		11X17	
R17	3900Ω		11X8	
R18	680K		11X25	
R19	470K		11X4	
R20	47K		11X17	
R21	1500Ω		11X3	
R22	27K		11X12	
R23	4.7meg		11X142	
R24	75K 5%		13X336	
R25	560K		11X109	
R26	560K		11X109	
R27	470K		11X4	
R28	820Ω		11X15	
R29	15K		11X34	
R30	5600Ω		11X95	
R31	8200Ω		11X153	
R32	470K		11X4	
R33	180K		11X37	
R34	220K 5%	1	13X71	
R35	1000Ω 5%	1	13X70	
R36	4.7meg		11X142	
R37	220K		11X121	
R38	220K		11X121	
R39	68K		11X74	

Note 1. Not used in some versions.

ITEM No.	RATING OHMS	RATING WATT	MAGNECORD PART No.	NOTES
R40	10meg			
R41	39K		11X65	
R42	47K		11X17	
R43	3900Ω		11X8	
R44	680K		11X25	
R45	470K		11X4	
R46	47K		11X17	
R47	1500Ω		11X3	
R48	27K		11X12	
R49	4.7meg		11X142	
R50	75K 5%		13X336	
R51	560K		11X109	
R52	560K		11X109	
R53	470K		11X4	
R54	820Ω		11X15	
R55	15K		11X34	
R56	5600Ω		11X95	
R57	8200Ω		11X153	
R58	470Ω		11X20	
R59	470Ω		11X20	
R60	10K		11X2	
R61	2200Ω	2	11X111	
R62	1200Ω	10	12X3	
R63	560Ω		11X163	
R64	560Ω		11X163	
R65	39K		11X65	
R66	50Ω	10	12X50	
R67	22K		6A11X10	
R68	22K		6A11X10	
R69	10K		B11X2	
R70	1000Ω			
R71	100K			Note 1
R72	470Ω		11X20	
R73	1200Ω	2	11X190	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA MAGNECORD PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	NOTES
L1	Bias Osc.	31A6						
L2	Equalizer Coil	31X46						
L3	Equalizer Coil	31X46						

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	REPLACEMENT DATA MAGNECORD PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .33A	660 VCT @ .030A	21VAC @ .3A	32B49						
	SEC. 3	SEC. 4	SEC. 5							
	6.3V @ 1.8A									

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA MAGNECORD PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.310A	42A6	1016	B1B	304B		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA MAGNECORD PART No. FUSE	MAGNECORD PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	1½A 125V S/B	53X21	53X5	31301.5 (3AG 1½A 125V) S/B	342001	AGC 1½	HKP

CRYSTAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA MAGNECORD PART No.	CBS PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M3	9GA12A	84X3				Meter Rect, Channel 1 (Pigtail)
M4	9GA12A	84X3				Limiter, Channel 1 (Pigtail)
M5	9GA12A	84X3				Meter Rect, Channel 2 (Pigtail)
M6	9GA12A	84X3				Limiter, Channel 2 (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	MAGNECORD PART No.	NOTES
M7	Record-Playback Head	91X2826	Includes Housing
M8	Erase Head	91X2543	Complete, Includes Housing
M9	Switch	43B146	Record-Playback
M10	Switch	43X127	Speed-Equalization-Selector(Slow-Fast)
M11	Switch	43B147	Off-On (Amp.)
M12	Switch	43A114	Interlock (Safety)
M13	Switch	43X36	Mono-Stereo
M14	Switch	6A43X14	Forward-Stop-Rewind (2)
M15	Switch	91A1060	Hi (Fast Forward)
M16	"VU" Meter	46B13	Channel 1
M17	"VU" Meter	46B13	Channel 2
M18	Motor	91B917	Rewind, Includes Friction Ass'y.
	Motor	35C30	Rewind
M19	Motor	35C34	Drive
	Motor Fan	78A201	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	87A14	Volume (Channel 1, Channel 2, Master)
Knob	87A88	Function, & Slow-Fast
Knob	75A96	Off-On

WIRING DATA

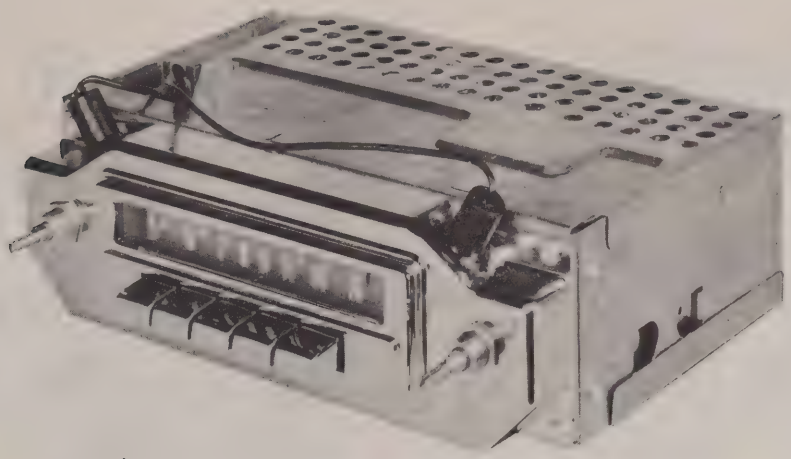
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No.	1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No.	8401
Phono Pick-up Arm Cable	Use BELDEN No.	8430 (Two Conductor - Twisted)

PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MOPAR
MODEL 858

MOPAR
MODEL 858



TRADE NAME	Mopar Model 858 (94BC) for 1959 Chrysler Automobiles
MANUFACTURER	Philco Corp., Tioga & "C" Streets, Philadelphia, Pa.
TYPE SET	Battery Operated 4 Tube Custom Built AM Automobile Receiver with Transistorized Output
POWER SUPPLY	12 Volt Storage Battery — RATING 1.4 Amp. @ 12.6 Volts DC
TUNING RANGE—BROADCAST	530-1605KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Set Volume at MINIMUM. Set Tone fully clockwise.
Use only enough generator output to provide a usable indication on VTVM.
Suggested Alignment Tools:
A1 thru A4 ..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6 .....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525
A8, A9, A10.... GENERAL CEMENT #9050L, 9150
WALSCO #2521

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
1.	.1mfd	High side to pin 7 (grid) of converter. Low side to chassis.	262.5KC (Unmod)	High Freq. end stop	DC probe to point (A). Common to chassis.	A1, A2, A3, A4	Adjust for maximum deflection.
2.	Fig. 1	Thru dummy (Fig.1) to antenna receptacle	1605KC	"	"	A5, A6, A7	"
	Step 3 is not necessary unless tuner has been tampered with or associated components have been replaced. Back tuning cores A8, A9 and A10 out of coils. Repeat step 2.						
3.	Fig. 1	Thru dummy (Fig.1) to antenna receptacle	1200KC	Tuner carriage .285 inch from high end stop.	DC probe to point (A). Common to chassis.	A8, A9, A10	Adjust for maximum deflection. Repeat steps 2 and 3.

PUSHBUTTON ADJUSTMENT

1. Tune manually to desired station.
2. Pull out pushbutton; press in firmly.
3. Repeat for remaining pushbuttons.

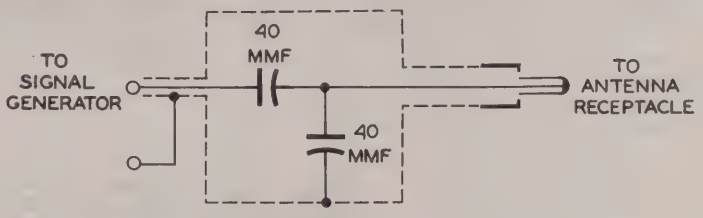


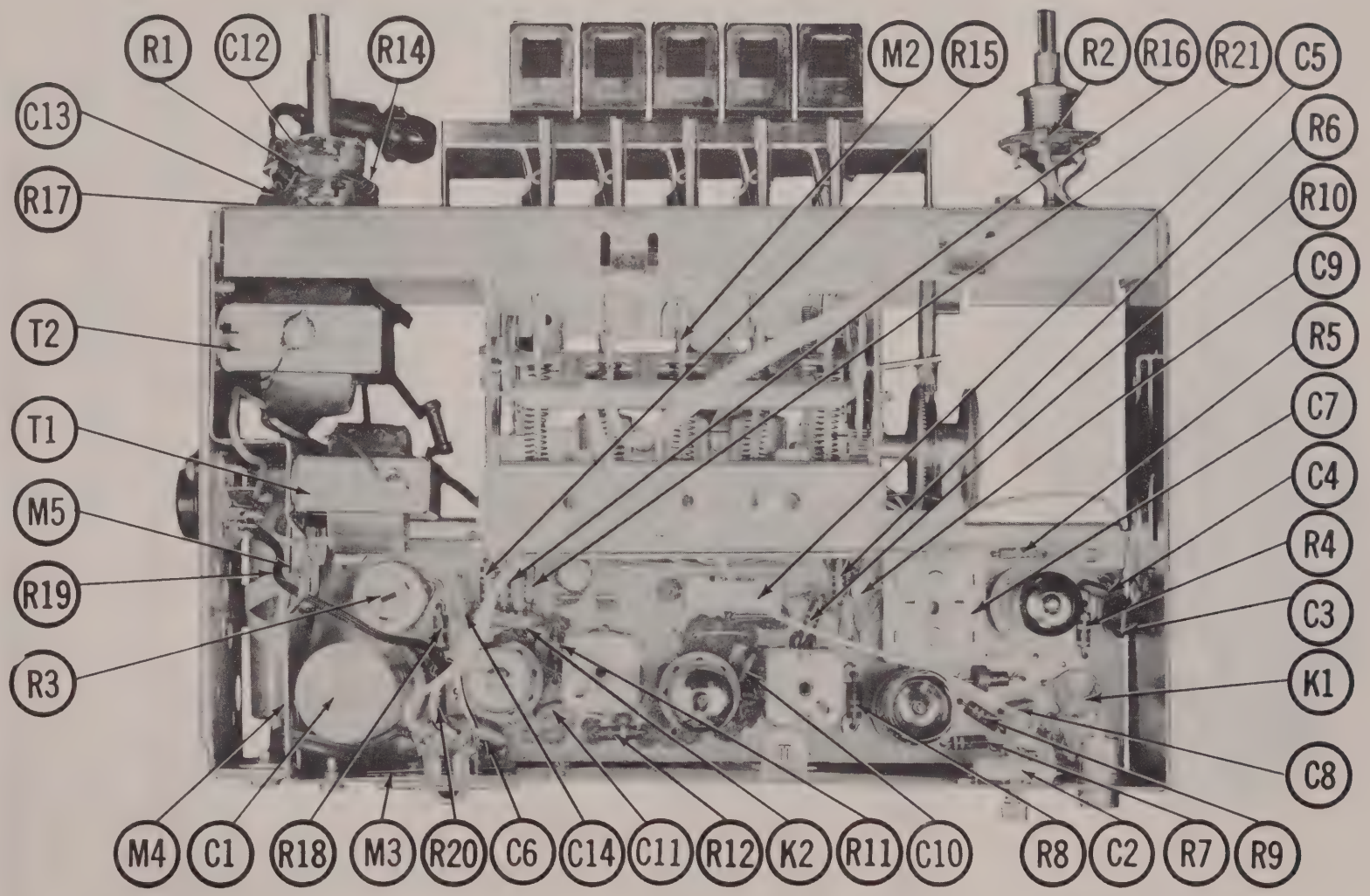
FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

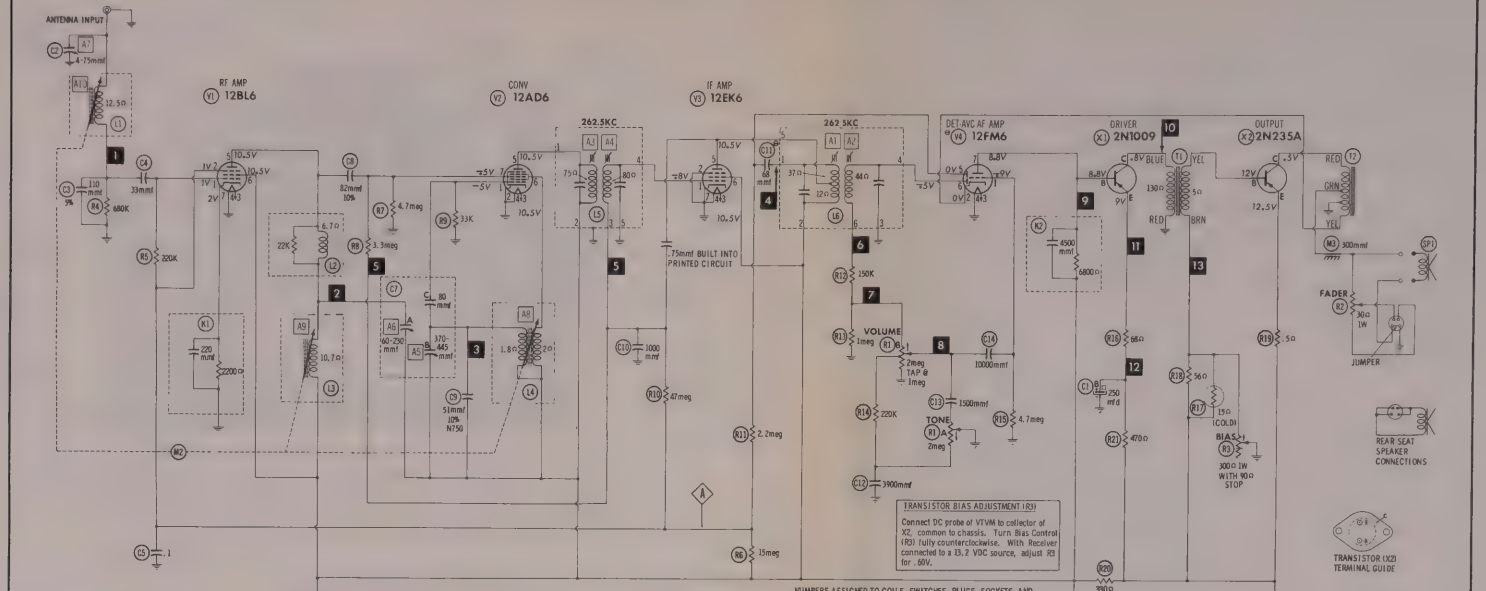
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

JD258

SET 457 FOLDER 11



CHASSIS TOP VIEW - CAPACITOR, RESISTOR, MISC, & TRANS IDENT.


ANTENNA INPUT
RF AMP
V1 12BL6
CONV
V2 12AD6
IF AMP
V3 12EK6
262.5KC
262.5KC
DET-AVC AF AMP
V4 12FM6
DRIVER
X1 2N1009
OUTPUT
X2 2N235A
VOLUME
TONE
FADER
JUMPER
REAR SEAT SPEAKER CONNECTIONS
BIAS
300Ω 1W WITH 90Ω STOP
TRANSISTOR BIAS ADJUSTMENT (R3)
Connect DC probe of VTVM to collector of X2, common to chassis. Turn Bias Control (R3) fully counterclockwise. With Receiver connected to a 13.2 VDC source, adjust R3 for .66V.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
L5 TERMINAL GUIDE
L6 TERMINAL GUIDE
TRANSISTOR (X2) TERMINAL GUIDE
TRANSISTOR (X1) TERMINAL GUIDE
1. DC voltage measurements taken with vacuum tube voltmeter ;
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Battery voltage maintained at 12.6 volts for voltage readings
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.
+ 12.6V SOURCE
SW ON VOLUME CONTROL
TO FILS
TO INSTRUMENT PANEL LAMPS
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BL6	12meg	12meg	2.8Ω	0Ω	†340Ω	†330Ω	2200Ω
V2	12AD6	33K	0Ω	2.8Ω	0Ω	†400Ω	†330Ω	4.7meg
V3	12EK6	7.5meg	0Ω	2.8Ω	0Ω	†340Ω	†330Ω	0Ω
V4	12FM6	4.7meg	.3Ω	2.8Ω	0Ω	15meg	800K	¶

¶ TRANSISTOR CIRCUIT RESISTANCE NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE

† MEASURED FROM JUNCTION OF R20 AND C1A

A Howard W. Sams CIRCUITRACE Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

MOPAR
MODEL 858

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	RF Amplifier	12BL6	
V2	Converter	12AD6	
V3	IF Amplifier	12EK6	
V4	Det.-AVC-AF Amp.	12FM6	12FK6 *

* Alternate.

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA				NOTES
			CBS PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N1009	Driver	2N256A		2N1009		PNP
X2	2N235A	Output	2N256A	2N301		2N235A	PNP, Note 1

Note 1. When replacing, apply silicone grease to both sides of insulator.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	BENDIX PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	500	16	220353-13	PWH3-00-94				PCLS-3026.6*	
B	▪250	16							
C	▲250	16							

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	BENDIX PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	4-75			219083-1						
C3	110		5%	220348-406	1464-00011	TCZ-110	22R5T11		MS-311	
C4	33			220332-35	BPD-000033	DD-330	L10Q33	CNO-433	5GA-Q33	
C5	.1	100		220352-11	P285N-1	DF-104	STM2P1	GTM-101	2TM-P1	
C6	.01	100		2090207-9	P285N-01	DD-103	STM2S1	GTM-111	2TM-S1	
C7A	60-230									
B	370-445			219092-3						
C	80									
C8	82		10%	220332-20	DI-82	DD-820	L10Q82	CNO-482	5GA-Q82S 10% *	
C9	51		N750 10%	220332-16		TCN-51	C10Q51U		5TCU-Q51S 10% *	
C10	1000			220332-36	BPD-001	DD-102	BYA10D1	B-210	5HK-D1	
C11	68				BPD-000068	DD-680	L10Q68	CNO-468	5GA-Q68	①
C12	3900			2090058T-392M	BPD-004	DD-392	BYA10D4	B-240	5HK-D4	
C13	1500			2090058T-152M	BPD-0015	DD-152	BYA10D15	B-215	5HK-D15	
C14	10000			220332-23	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	

① Some versions may use 51mmf in this application (Part #220332-47).

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESIST-ANCE	WATTS	BENDIX PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	2090887-2	F1-71				Tone
B	2meg	½		R2-75		† QJ1108A	♦ UE4023-S	Volume, Tap ⓑ 1meg
C	Switch			KR-7				Off-On
D	Bushing			AK-28				
R2	30Ω	1(WW)	2090627-2					Fader
R3	300Ω	1(WW)	2090181-6					Bias with 90Ω Stop

† "Concentrikit" Equivalent: K-8 Kit with Base Elements & Shafts: B11-139, P14-026 (Panel)
B18-139X, R9-110 (Rear)
76-2 (Switch)
S-11 (Bushing)

♦ "STA-LOC" Equivalent: FF26L, RU26T16, OS812, IS1312. US42.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT		
R4	680K		220604B-684	
R5	220K		220604B-224	
R6	15meg		220604B-156	
R7	4.7meg		220603B-475	
R8	3.3meg		220604B-335	
R9	33K		220604B-333	
R10	47meg		220604B-476	
R11	2.2meg		220603B-225	
R12	150K		220604B-154	

ITEM No.	RATING		BENDIX PART No.	NOTES
	OHMS	WATT		
R13	1meg		220604B-105	
R14	220K		220604B-224	
R15	4.7meg		220604B-475	
R16	68Ω		220604B-680	
R17	15Ω Cold		220629-8	
R18	56Ω		220603B-560	
R19	.5Ω		2090438-15	5 1/2" Cupron Wire
R20	330Ω		220604B-331	
R21	470Ω		220604B-471	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		BENDIX PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Ant. Tuning Coil	†						①
L2	RF Choke	2090088-5						
L3	RF Tuning Coil	†						
L4	Osc. Tuning Coil	†						
L5	Input IF Trans.	2090876-1						
L6	Output IF Trans.	2090877-1						

① Wound on 22K resistor.

† Part of M2 or Coil Ass'y. Part #2090131-15.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA						
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ~)	BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
L7	1.4A	.3Ω	.0015 Hy.	2090889-3						

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA						NOTES
	PRI.	SEC.	BENDIX PART No.	Halldorson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5.8	1	2090700-2						

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE	REPLACEMENT DATA							NOTES
	PRI.	BENDIX PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	22Ω tap ⓐ 3-4Ω	2090648-4							

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	BENDIX PART No.	QUAM PART No.	
SP1	5" x 7"	PM	3-4Ω	2090744-2 ①	57A21	① Includes cover.

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	BENDIX PART No.	REPLACEMENT DATA
K1	RF Cathode	220mmf, 2200Ω		
K2	AF Amp. Plate	4500mmf, 6800Ω		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			BENDIX PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SF2	7.5A 32V	SFE-7½A ①		30707.5 (7AG 7½A 32V)		SFE 7½	

① Located on fuse block in auto.

MISCELLANEOUS

ITEM No.	PART NAME	BENDIX PART No.	NOTES
M2	Tuner	2090862-4	Complete
M3	Spark Plate	220267-12	300mmf
M4	Spark Plate	220267-16	280mmf
M5	Spark Plate	220267-16	280mmf
	Printed Board	2090944-1	

CABINETS & CABINET PARTS

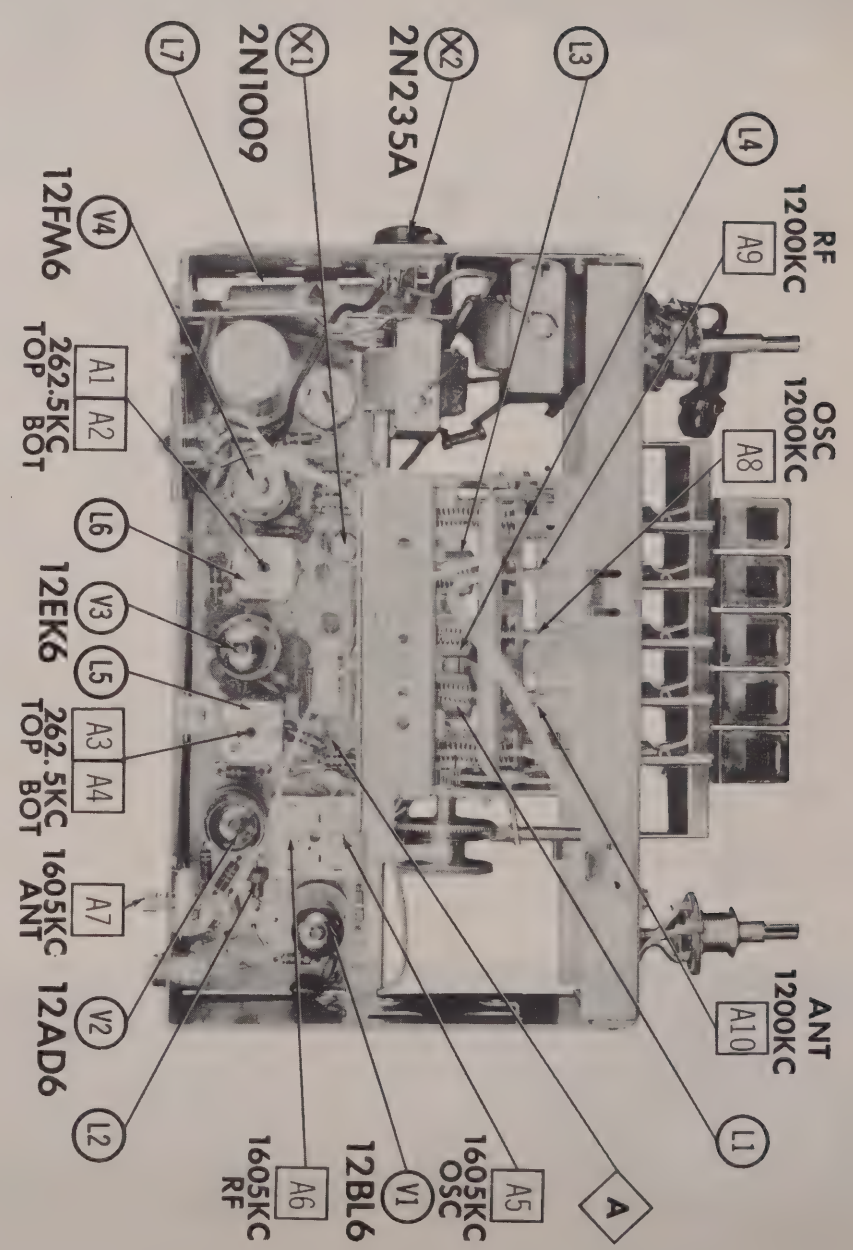
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob Ass'y.	2090782-2	
Pushbutton Ass'y.	2090940-1	
Dial Glass	2090780-1	
Pointer	2090129-13	

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire .....Use BELDEN No. 8885
Bonding Strap .....Use BELDEN No. 8661

CHASSIS—TOP VIEW

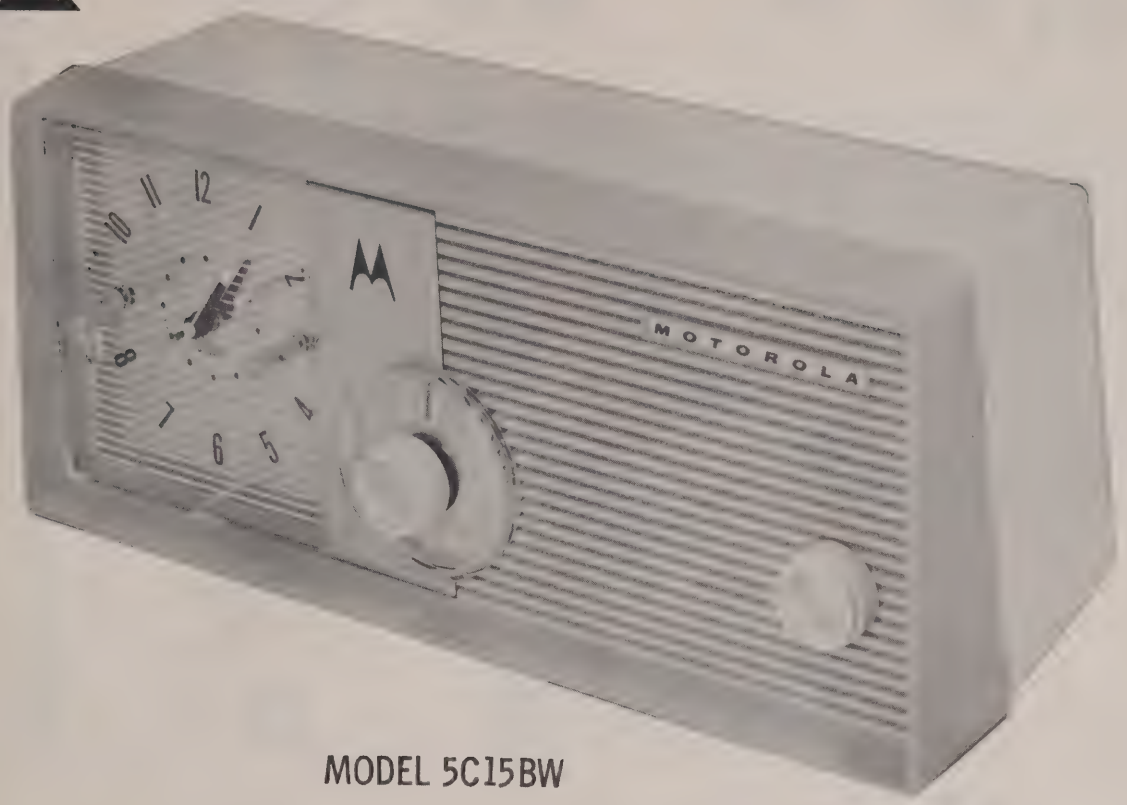


PHOTOFACT* Folder with CIRCUITRACE*

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

MOTOROLA MODELS 5C15BW, GW, VW (Ch. HS-662)

MOTOROLA MODELS 5C15BW, GW, VW (Ch. HS-662)



MODEL 5C15BW

TRADE NAME	Motorola Models 5C15BW, 5C15GW, 5C15VW (CH. HS-662)
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	27 Watts, .28 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	532 — 1620KC

MOTOROLA MODELS 5C15BW, GW, VW (Ch. HS-662)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.
Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator.
Suggested alignment tools: A1, thru A4..... GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545
A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.1mfd	High side thru .1mfd to pin 7 of Converter (V1). Low side to B— .	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2 & 3.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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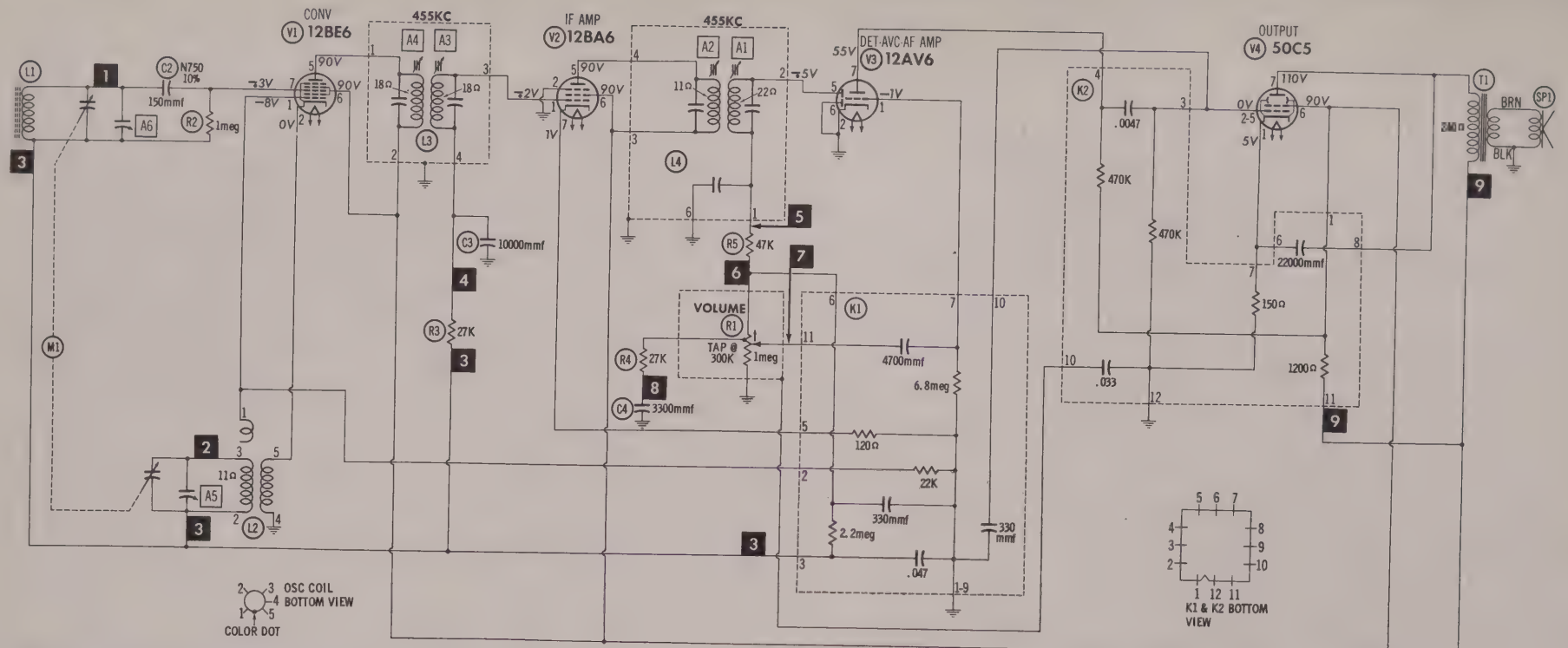
JG244

SET 457 FOLDER 12



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	1Ω	24Ω	12Ω	†1300Ω	†1300Ω	4.2meg
V2	12BA6	3.2meg	0Ω	24Ω	36Ω	†1300Ω	†1300Ω	120Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	1meg	0Ω	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1300Ω	†340Ω
V5	35W4	NC	NC	86Ω	120Ω	110Ω	110Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5 NC NO CONNECTION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE®

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1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

THROUGH CAMS & LINKAGES ONE SWITCH PERFORMS ALL FUNCTIONS OF ON-OFF-AUTO & SLEEP.

MOTOROLA MODELS 5C15BW, GW, VW (Ch. HS-662)

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	150	23B639496	AFH3-11-30	C0090 ǂ	PFP311.63		PCLS-3439.1*	
B	▲40	150							
C	30	150							

ǂ Use Printed Circuit Adapters 55277 & 55278
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	MOTOROLA PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	150		N750 10%	21K127652	N750-DI 150	DTN-150	C10T15U	CN7-315	5TCU-T15S 10%*	
C3	10000			21B533471	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	3300			21K533473	BPD-0033	DD-332	BYA10D33	B-233	5HK-D33	
C5	.05	400		8K128690	P488N-05	DF-503	CUB4S5	GEM-415	4TM-S5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	1meg	½	18K637988					Volume, Tap@300K

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R2	1meg		6K122324	
R3	27K		6K121300	
R4	27K		6K121300	

ITEM No.	RATING		MOTOROLA PART No.	NOTES
	OHMS	WATT		
R5	47K		6K121687	
R6	100Ω		6R6018	

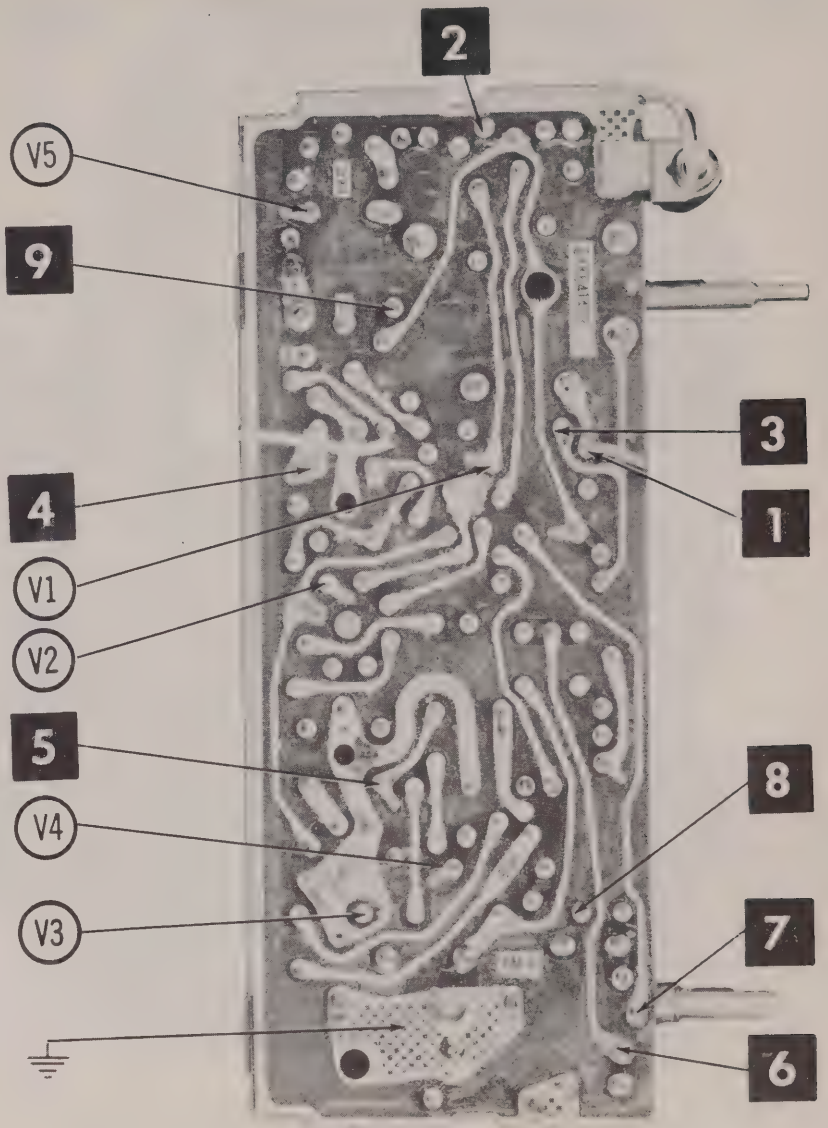
COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MOTOROLA PART No.	REPLACEMENT DATA
K1	Detector, AVC & Audio Coupling	330mmf, 330mmf, 4700mmf, .047mfd , 120Ω, 22K, 2.2meg, 6.8meg	51C637000	
K2	Audio Coupling	22000mmf, .033mfd, .0047mfd, 150Ω, 1200Ω, 470K, 470K	51K637001	

PRINTED BOARD

A Howard W. Sams CIRCUITRACE* Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MOTOROLA PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	24K638190						
L2	Osc. Coil	24B637228						
L3	Input IF	24K636016	16-6780	16-6780	BC-356	13-PC9	RF-4	
L4	Output IF	24K639362	16-6781	16-6781		13-PC6		

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MOTOROLA PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3100Ω	3-4Ω	25B640767	24S53①	A-3025①	AU-603①	A-3332①	24S53①	S-12X①	① Use Orig. Mtg. Frame

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MOTOROLA PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	50K641383	4A15	

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M1	Tuning Cap.	19B640769	2 Gang
M2	Clock Assembly	72K640838	
	Printed Board	84K641493	(Less Components)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

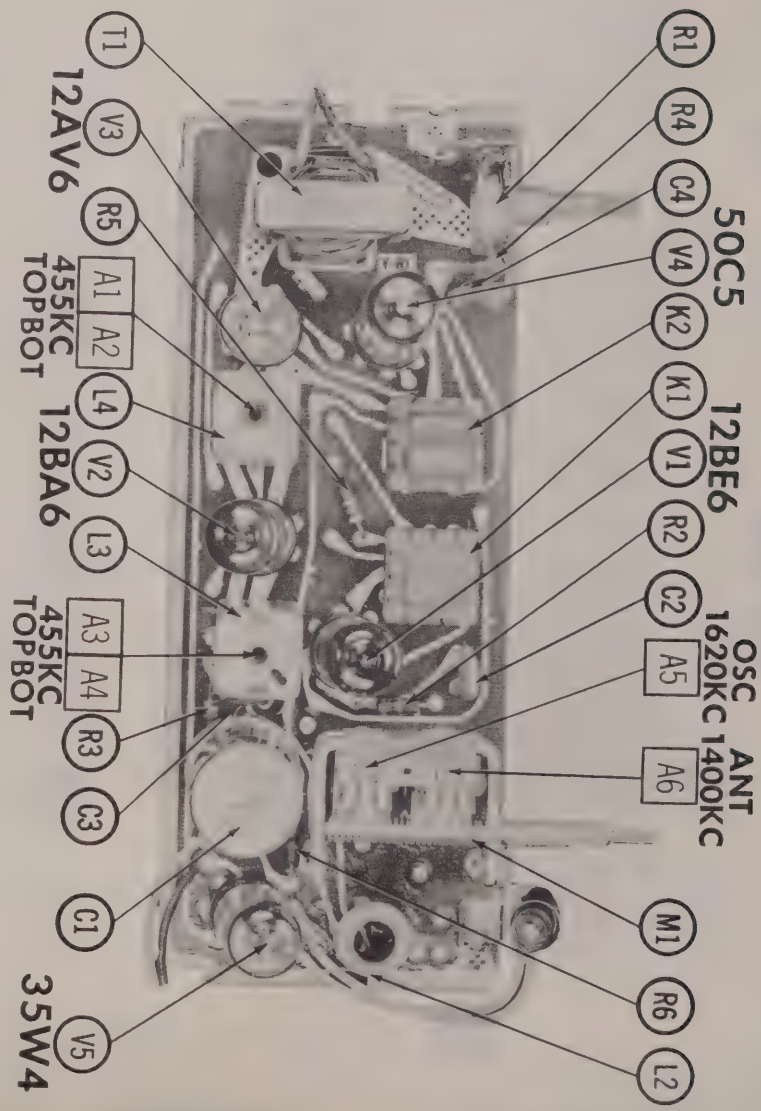
NAME	PART NO.	DESCRIPTION
Knob	36B638014	Tuning
Knob	36K638015	Volume
Knob	36K637836	Clock
Knob	36B637996	Dial Scale
Cabinet Front	1V642896	Blue, Model 5C15BW
Cabinet Front	1V640956	Green, Model 5C15GW
Cabinet Front	1V640957	Hyacinth, Model 5C15VW
Cabinet Back	1V640958	Antique White
Clock Crystal	61K638013	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord (Interlock Type) ..... Use BELDEN No. 8874

CHASSIS—TOP VIEW



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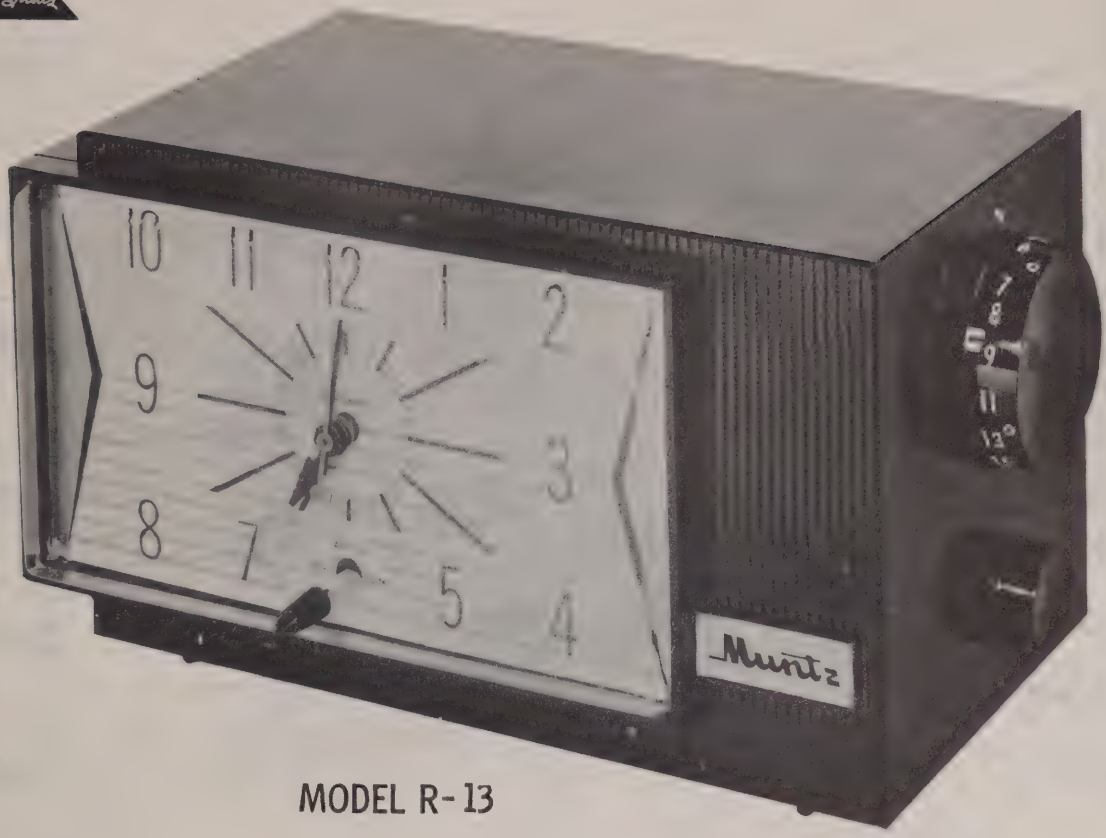

MODEL R-13

TRADE NAME	Muntz Models R-11, R-13
MANUFACTURER	Muntz TV Inc., 1000 Grey Ave., Evanston, Illinois
TYPE SET	AC Operated 5 Tube AM Receiver With Electric Clock
POWER SUPPLY	110-120 Volts AC, 60 Cycles
RATING	29 Watts, .32 Amp. @117 Volts AC (Less Clock)
TUNING RANGE—BROADCAST	535—1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator.

Suggested alignment tools: A1 thru A4..... GENERAL CEMENT #5097, 8727
WALSCO #2515
A5, A6..... GENERAL CEMENT #5004, 5008, 5009
WALSCO #2520

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 7 (grid) of Converter. Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully open	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	"	"	A5, A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	600KC	600KC	"		Check tracking.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JG256

MUNTZ MODELS
R-11, R-13
MUNTZ MODELS
R-11, R-13
SET 457 FOLDER 13

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. -AVC-AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	MUNTZ PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	40	150	CE-8003	PRS150/25V	BBRT4215C	TCT3114	TDLT-12	TVA-3423	
B	20	150		4020/20					
C	20	15							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING		TOL	REPLACEMENT DATA						NOTES
	CAP.	VOLT		MUNTZ PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	100				SI 100	D6-101	L10T1	UC531	5GA-T1	
C3	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	.0022	600			P688N-0022	DD-222	CUB6D22	GEM-6222	6TM-D22	
C5	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C6	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C7	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	MUNTZ PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2.5meg	½	8009	B-83	A47-2.5meg-S	Q11-239	TA255L	Volume Note 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

Note 1. Model R-11 uses 2.5meg control with switch.

RESISTORS

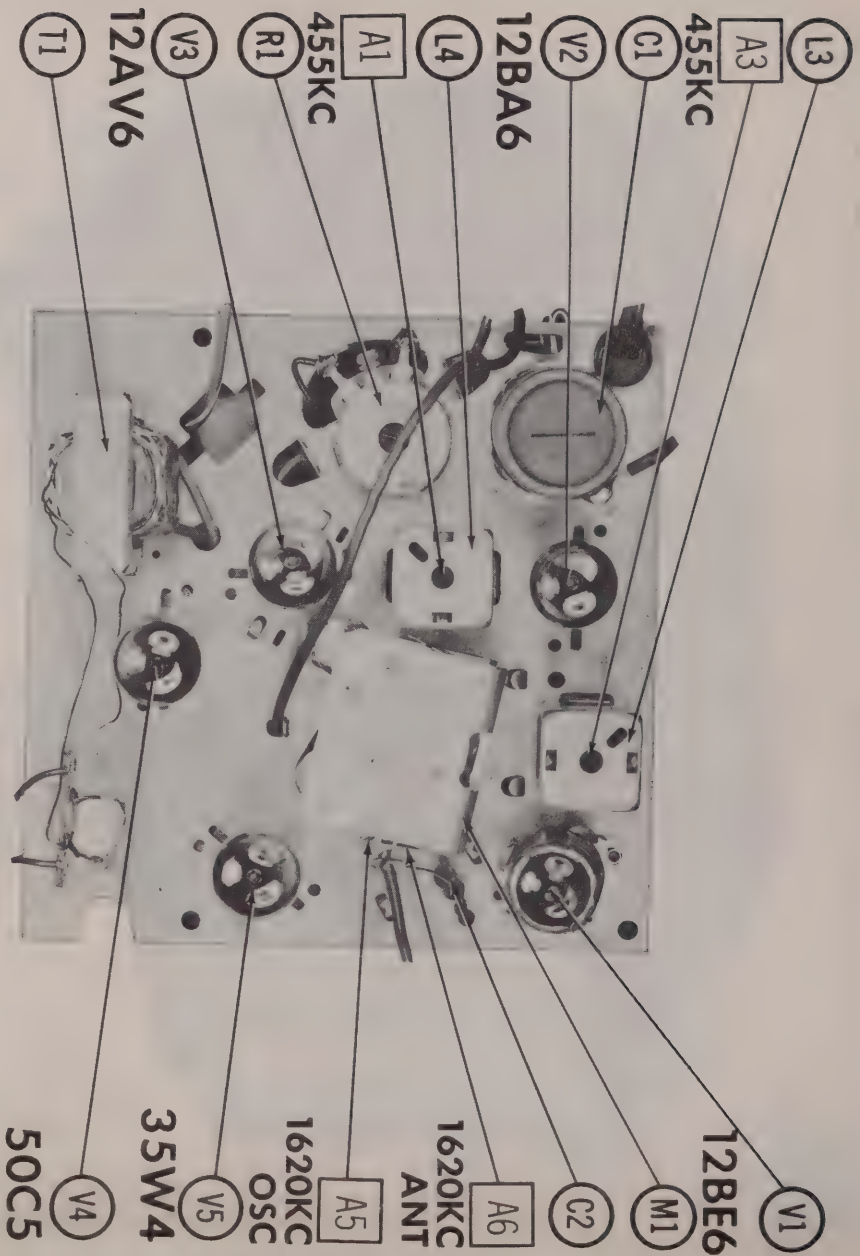
All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		MUNTZ PART No.	NOTES
	OHMS	WATT		
R2	2.2meg			
R3	22K 5%			
R4	180Ω			Note 1
R5	1500Ω			

Note 1. Some versions may use 100Ω in this application.

ITEM No.	RATING		MUNTZ PART No.	NOTES
	OHMS	WATT		
R6	1meg			
R7	180Ω			
R8	1200Ω	1		
R9	22Ω			

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	MUNTZ PART No.	REPLACEMENT DATA	
K1	Detector-AVC-AF Circuit	250mmf, 220mmf, 2000mmf, 5000mmf, 470K, 470K, 6.8meg		Aerovox Centralab Cornell-Dubilier Sprague	PA-113-1 PC-150 116TM1 DT-1

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		MUNTZ PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loop Ant.							
L2	Osc. Coil							
L3	Input IF Trans.	LI-8001	16-6758	16-6758	BC-352	12-C1	RF-1	
L4	Output IF Trans.	LI-8001	16-6758	16-6758	BC-353	12-C2	RF-2	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	MUNTZ PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2200Ω	3-4Ω	TA-8003	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	MUNTZ PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	SK-0035	4A07	

MISCELLANEOUS

ITEM No.	PART NAME	MUNTZ PART No.	NOTES
M1	Tuning Cap.		2 Gang (Ant. 15—351mmf, Osc. 11—108mmf)

CABINETS & CABINET PARTS

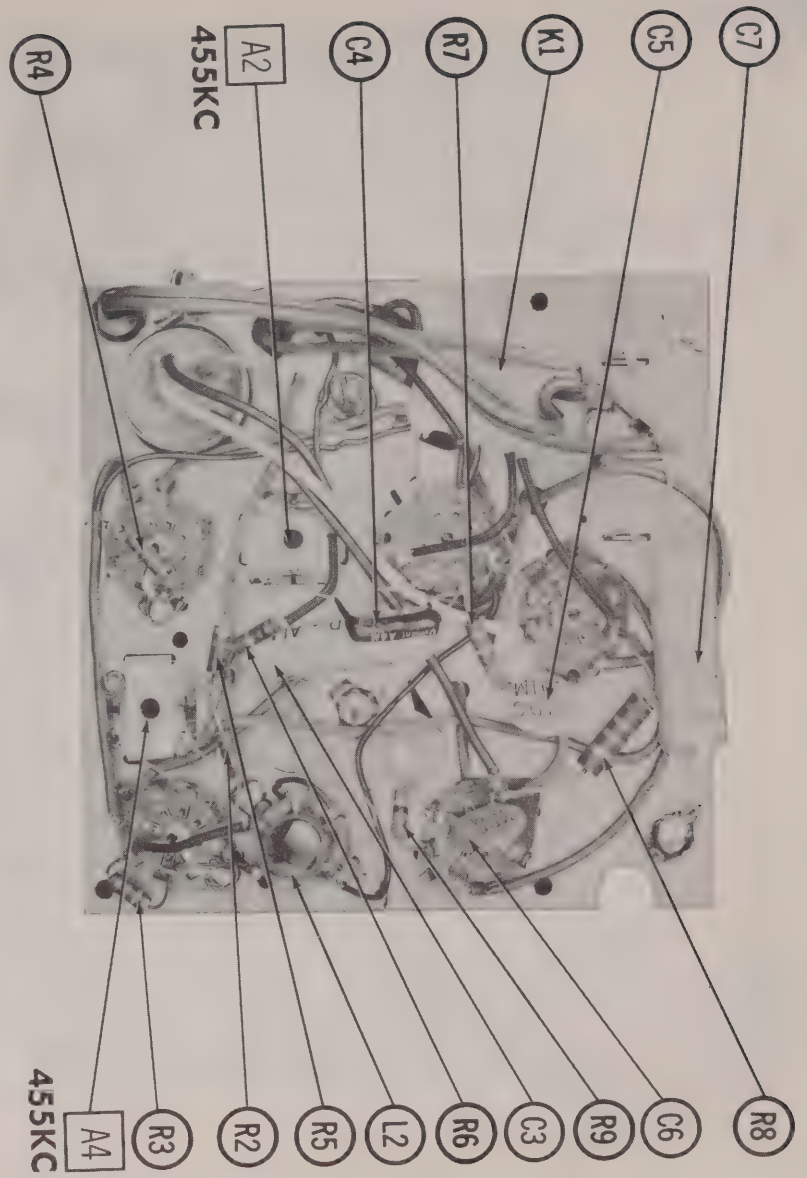
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

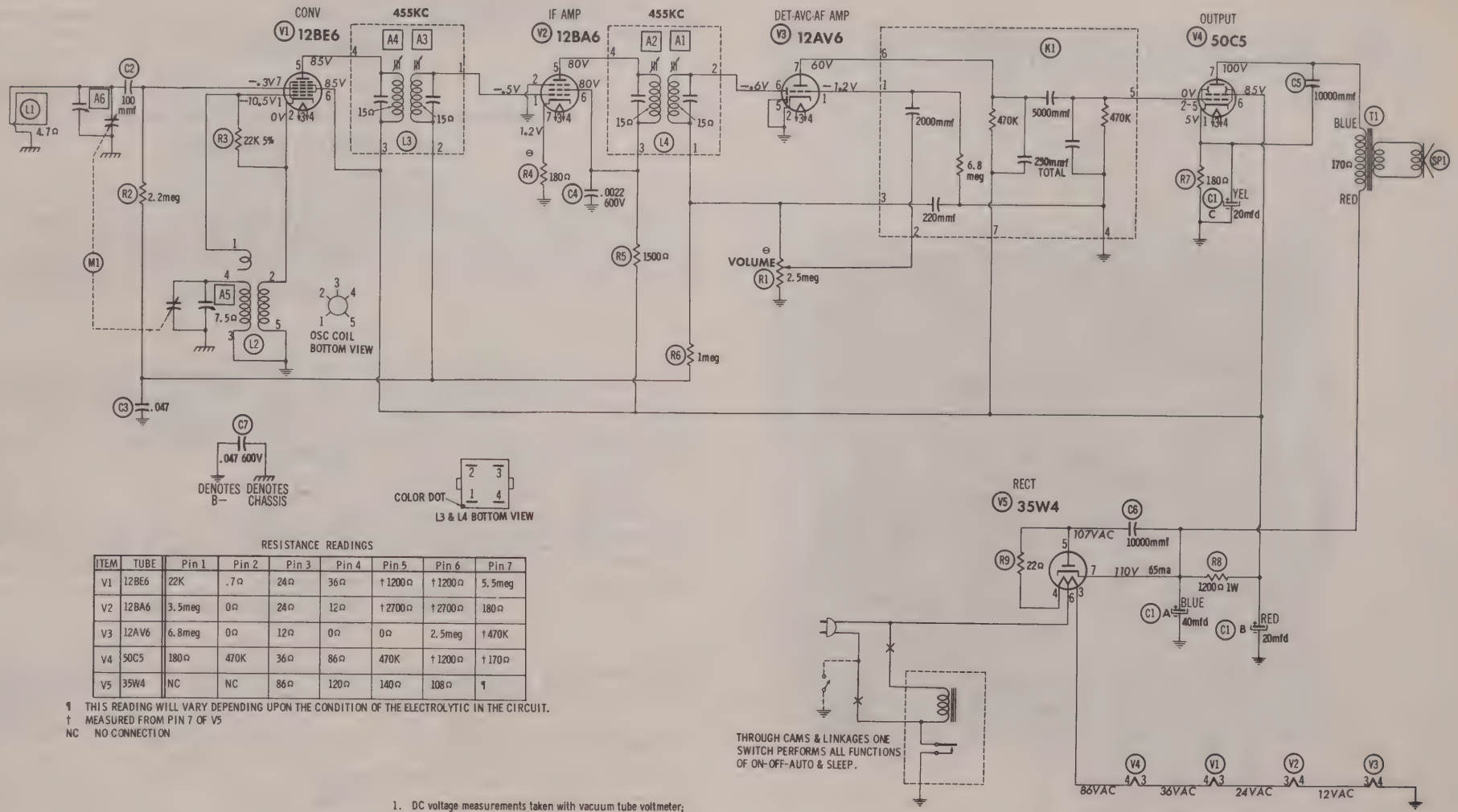
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS BOTTOM VIEW





RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.7Ω	24Ω	36Ω	†1200Ω	†1200Ω	5.5meg
V2	12BA6	3.5meg	0Ω	24Ω	12Ω	†2700Ω	†2700Ω	180Ω
V3	12AV6	6.8meg	0Ω	12Ω	0Ω	0Ω	2.5meg	†470K
V4	50C5	180Ω	470K	36Ω	86Ω	470K	†1200Ω	†170Ω
V5	35W4	NC	NC	86Ω	120Ω	140Ω	108Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5
NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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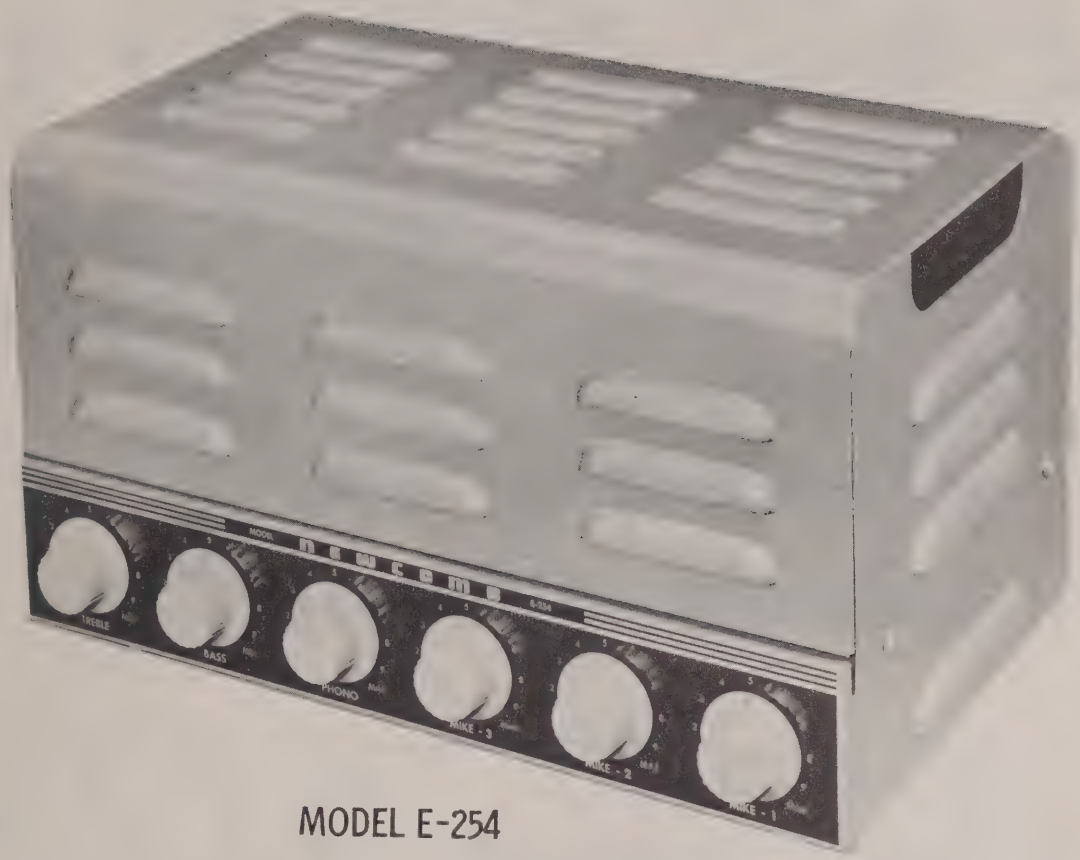
MUNTZ MODELS
R-11, R-13

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

NEWCOMB MODELS E-254, E-254P3

NEWCOMB MODELS
E-254, E-254P3



MODEL E-254

NEWCOMB MODELS
E-254, E-254P3

TRADE NAME	Newcomb Models E-254, E-254P3
MANUFACTURER	Newcomb Audio Products Co., 6824 Lexington Ave., Hollywood 38, California
TYPE SET	AC Operated 8 Tube 4 Channel Audio Amplifier (Model E-254P3 Has Manual Record Player)
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 100 Watts, 1 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of JX229

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1959 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Mike #1 Preamplifier	6SF5	
V2	Mike #2 Preamplifier	6SF5	
V3	Mike #3 Preamplifier	6SF5	
V4	AF Mixer	6SJ7	
V5	AF Amp-Phase Inv.	6SN7GTB	
V6	Output	6L6GB	
V7	Output	6L6GB	
V8	Rectifier	5V4GA	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	NEWCOMB PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲20	475	CE-30	AFH4-19-10	C0260	FP474.5	TMT-34	TVLS-4825*	
B	■10	475			BBR25-50		TD-25-50	TVA-1306	
C	▲10	475							
D	25	50							
C2	8	500		PRS500V8	BR850	TC81	TD-8-500	TVA-1902	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	NEWCOMB PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C4	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C5	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C6	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C7	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C8	.047	600			P688N-047	DF-503	CUB6S47	GEM-6147	6TM-S47	
C9	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C10	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C11	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C12	20000				BPD-02	DD-203	BYB6S2	B-120	5HK-S2	
C13	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C14	1500		10%				PM6D15	JL-215	6TM-D15	
C15	750		10%				1R5T75	JL-375	MS-375	①
C16	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	
C17	.1	600			P688N-1	DF-104	CUB6P1	GEM-601	6TM-P1	

① Some versions may use 5000mmf in this application.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NEWCOMB PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	2meg	½	RV-49	B-77		Q17-139		Treble
B	Switch			KR-1		76-1		Off-On
R2	15meg	½	RV-40					Bass
R3A	500K	½	RV-47	BT-67	A47F2-500K	Q20-133X	UT-430	Phono, Tap @ 150K
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R4A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Mike 3
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R5A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Mike 2
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
R6A	500K	½	RV-41	B-60	A47-500K-Z	Q13-133	U48	Mike 1
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

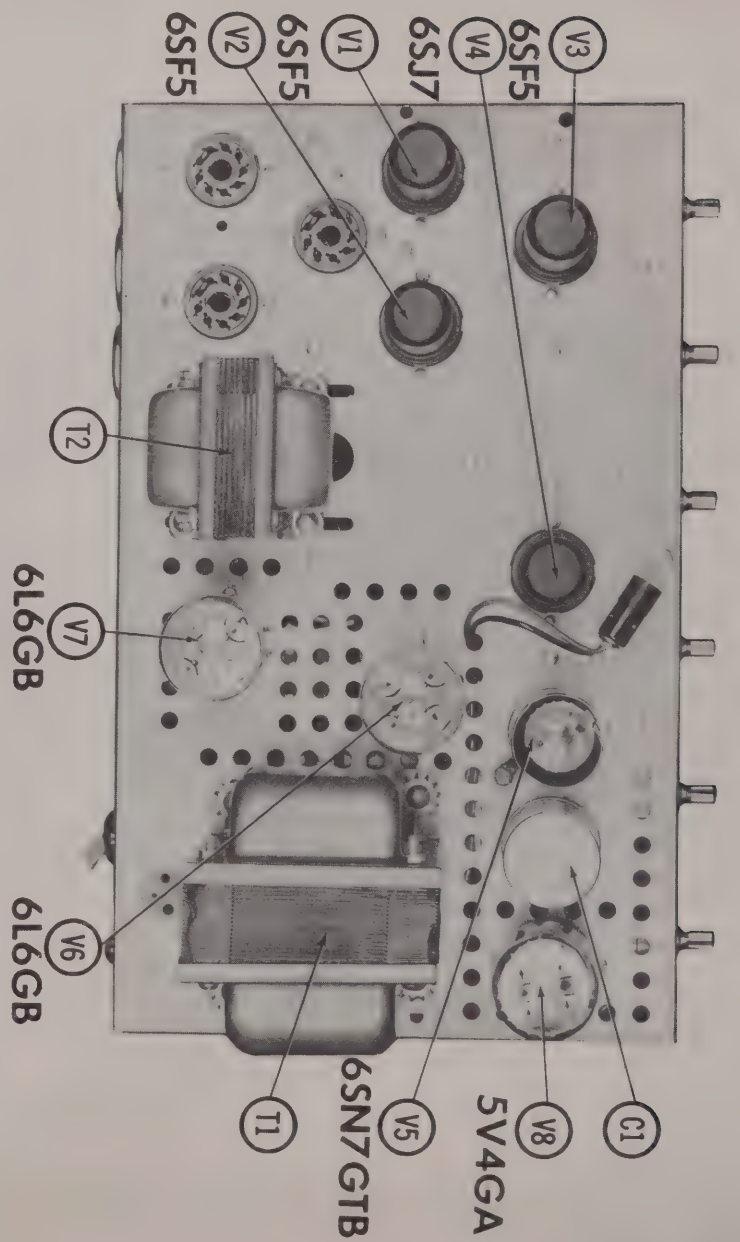
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		NEWCOMB PART No.	NOTES
	OHMS	WATT		
R7	18meg			
R8	18meg			
R9	18meg			

ITEM No.	RATING		NEWCOMB PART No.	NOTES
	OHMS	WATT		
R10	100K			
R11	100K			
R12	100K			

CHASSIS—TOP VIEW



PARTS LIST & DESCRIPTION (continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	NEWCOMB PART No.	NOTES
R13	22K			
R14	470K			
R15	470K			
R16	470K			
R17	470K			
R18	10meg			
R19	270K			
R20	1.2meg			
R21	560Ω			
R22	560K			
R23	100K			
R24	100K			
R25	2200Ω			
R26	82K			
R27	100K			
R28	2200Ω			
R29	270K			
R30	27K			
R31	270K			
R32	5000Ω	5		Note 1
R33	250Ω	5		
R34	33K	1		
R35	56K			

Note 1. Some versions may use 3000Ω 5W in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ 1A	750 VCT @ .120A	5V @ 2A	TR-118	22R33①	P-3155①		PC8411	22R33①	R-18A
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @ 3.7A									

① Drill new mounting holes.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	NEWCOMB PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	5200Ω CT	500Ω Tap @ 70V, 16Ω, 8Ω, 4Ω	TR-188 ①	22S70 ②				22S70②		① Alternate Part # TR-151 ② Use 250Ω Tap For 70V Line

FUSES

ITEM No.	TYPE	RATING	NEWCOMB PART No. FUSE	NEWCOMB PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	MDL	1.6A 125V S/B			31301.6 (3AG 1 6/10A 125V S/B)	341001	MDL 1 6/10	HKP

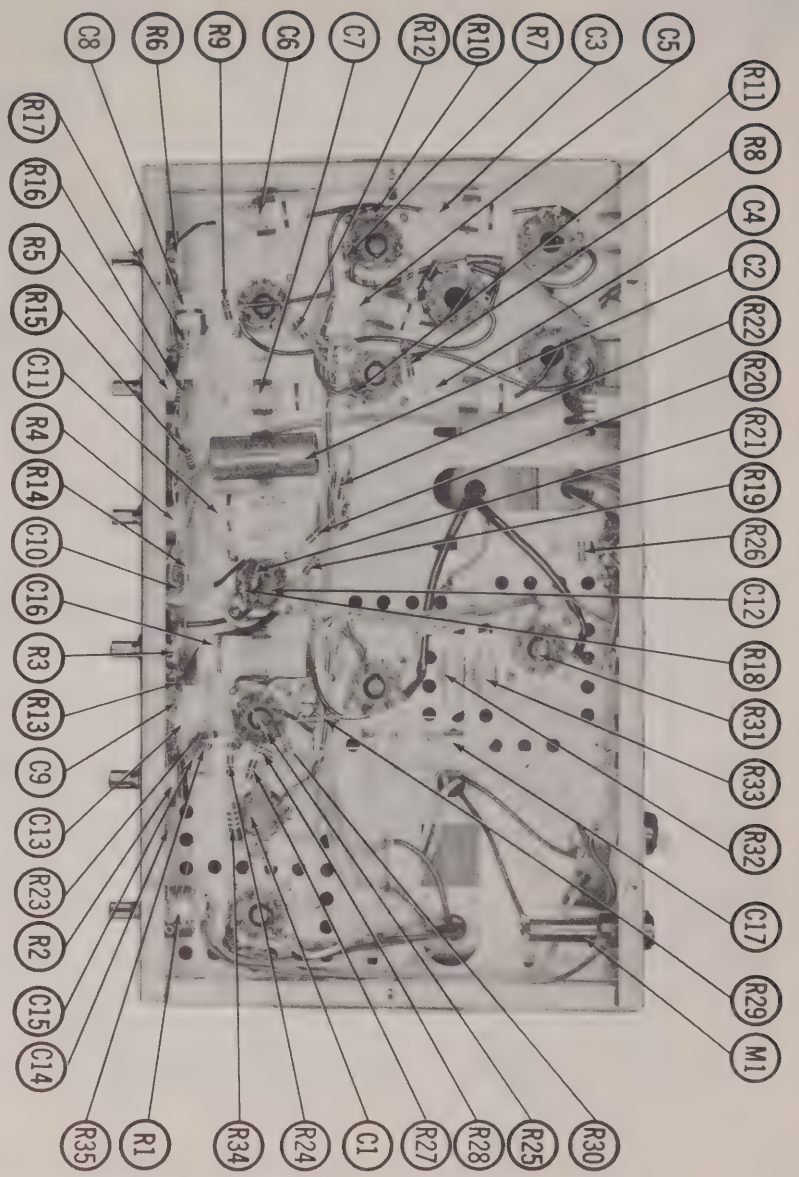
CABINETS & CABINET PARTS

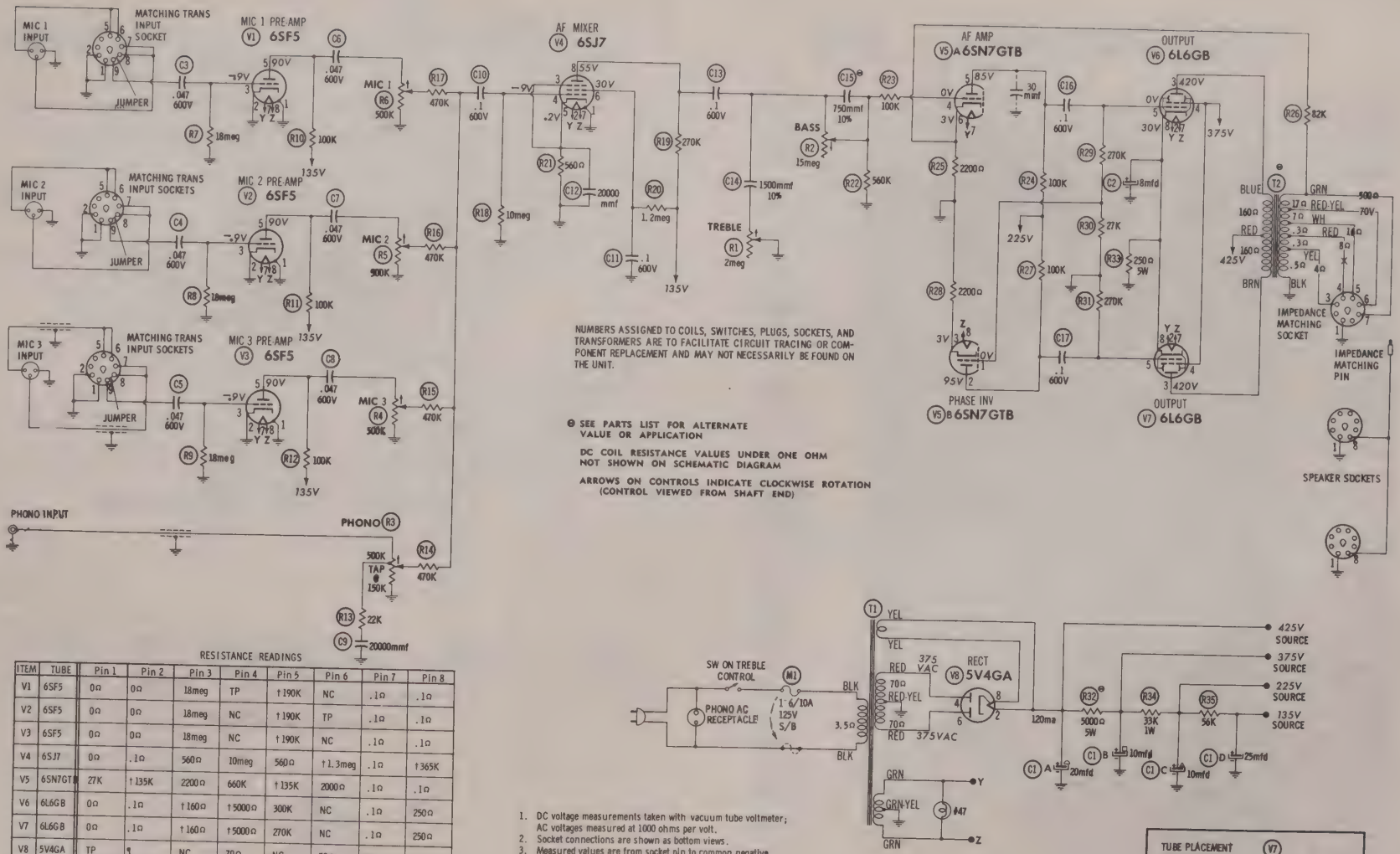
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

CHASSIS BOTTOM VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
V1	6SF5	0Ω	0Ω	18meg	TP	†190K	NC	.1Ω	.1Ω
V2	6SF5	0Ω	0Ω	18meg	NC	†190K	TP	.1Ω	.1Ω
V3	6SF5	0Ω	0Ω	18meg	NC	†190K	NC	.1Ω	.1Ω
V4	6SJ7	0Ω	.1Ω	560Ω	10meg	560Ω	†1.3meg	.1Ω	†365K
V5	6SN7GTB	27K	†135K	2200Ω	660K	†135K	2000Ω	.1Ω	.1Ω
V6	6L6GB	0Ω	.1Ω	†160Ω	†5000Ω	300K	NC	.1Ω	250Ω
V7	6L6GB	0Ω	.1Ω	†160Ω	†5000Ω	270K	NC	.1Ω	250Ω
V8	5V4GA	TP	¶	NC	70Ω	NC	70Ω	NC	¶

† MEASURED FROM PIN 8 OF V8
NC NO CONNECTION
TP TIE POINT
¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
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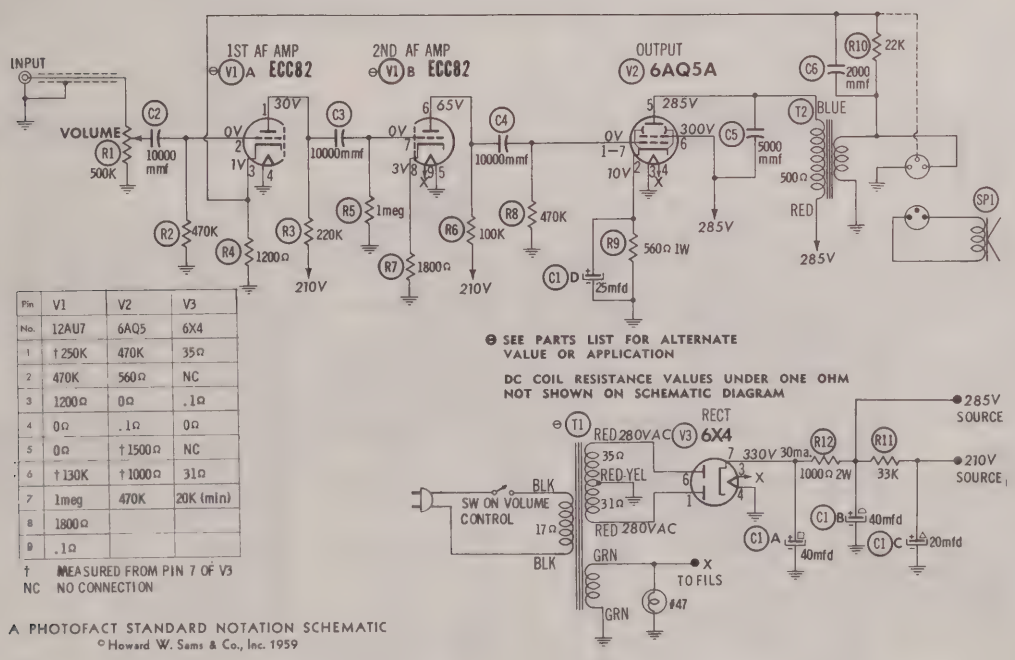
NEWCOMB MODELS E-254, E-254P3

PHOTOFACT* Folder

TRADE NAME	Packard-Bell Model SA-5
MANUFACTURER	Packard-Bell Electronics Corp., Service Dept., 1920 S. Figueroa St., Los Angeles 7, Calif.
TYPE SET	AC Operated 3 Tube Audio Amplifier
POWER SUPPLY	110-120 Volts AC, 60 Cycles RATING 25 Watts, .28 Amp. @ 117 Volts AC



Pin No.	V1	V2	V3
1	†250K	470K	35Ω
2	470K	560Ω	NC
3	1200Ω	0Ω	.1Ω
4	0Ω	.1Ω	0Ω
5	0Ω	†1500Ω	NC
6	†130K	†1000Ω	31Ω
7	1meg	470K	20K (min)
8	1800Ω		
9	.1Ω		

† MEASURED FROM PIN 7 OF V3
NC NO CONNECTION

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PACKARD-BELL
MODEL SA-5
SET 457 FOLDER 15

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	ECC82/ 12AU7	

ITEM No.	USE	TYPE	NOTES
V2	Output	6AQ5A	
V3	Rectifier	6X4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Packard - Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	■40	350	24092	AFH4-52	D0430	FP419.3	TMQ-56	TVL-4621.6	
B	▲40	350							
C	▲20	350							
D	25	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	10000			23862	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C3	10000			23862	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	10000			23862	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	5000			23931	BPD-005	DD-502	BYA10D5	B-250	5HK-D5	
C6	2000			23839	BPD-002	DD-202	BYA10D2	B-220	5HK-D2	

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	25047A				PP55A	Volume
B	Switch						Not Req.	Off-On Push Pull

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R2	470K		73157	
R3	220K		73153	
R4	1200Ω		73026	
R5	1meg		73161	
R6	100K		73049	
R7	1800Ω		73028	

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R8	470K		73157	
R9	560Ω	1	73222	
R10	22K		73041	
R11	33K		73043	
R12	1000Ω	2	73425	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	Packard - Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V@ .28A	560 VCT @.030A	6.3V@ 1.5A	89068 ①						R-5A

① Alternate Part #89081.

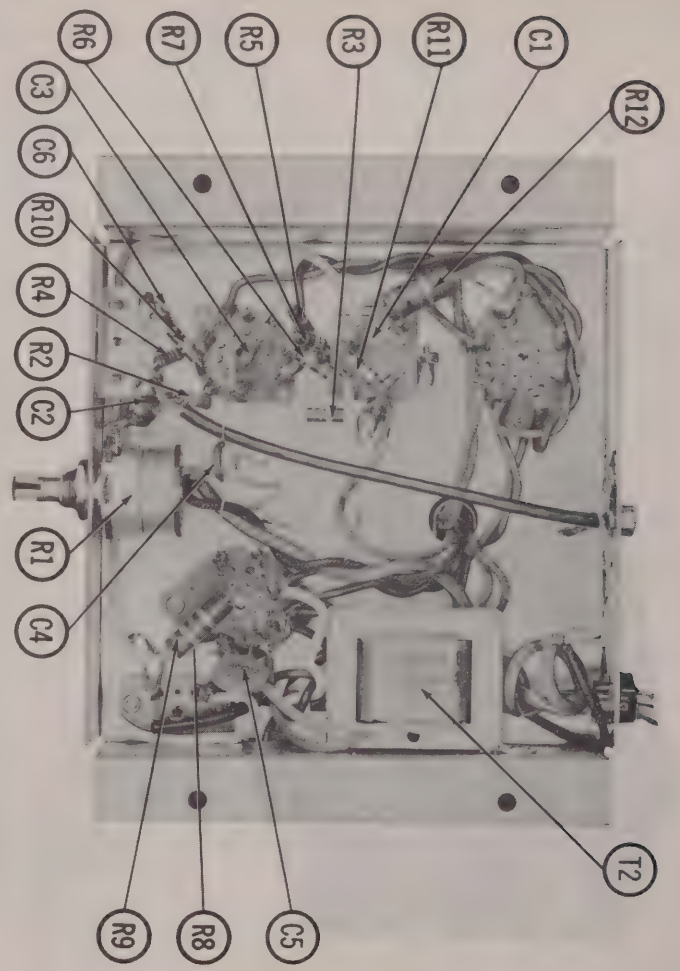
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4700Ω	3-4Ω	89436	24S51	A-2930	AU-601	A-3850	24S51	S-3X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP1	6"x 9"	PM	3-4Ω	83112	69A2	

CHASSIS BOTTOM VIEW



CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	52260A	Volume

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

*TRADE MARK

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

PACKARD-BELL MODEL 5R5

PACKARD-BELL
MODEL 5R5

PACKARD-BELL
MODEL 5R5

TRADE NAME	Packard-Bell Model 5R5
MANUFACTURER	Packard-Bell Co., Service Dept., 11th & Hope Streets, Los Angeles 15, California
TYPE SET	AC-DC 5 Tube AM Receiver
POWER SUPPLY	110-120 Volts AC-DC
RATING	27 Watts, .28 Amp. @ 117 Volts AC
TUNING RANGE—BROADCAST	540 - 1620KC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use isolation transformer, if available. If not, connect a .1mfd capacitor in series with low side of signal generator. Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3, A4 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO #2531
A5, A6 ..... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	.01mfd	High side to pin 1 (grid) of Conv. (V1). Low side to chassis.	455KC (400~ Mod.)	Tuning gang fully closed	Across voice coil	A1, A2, A3, A4	Adjust for maximum output.
2.		Loop	1620KC	Tuning gang fully open	"	A5	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.		"	1500KC	Tune to 1500KC signal	"	A6	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JG157

SET 457 FOLDER 16

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Converter	12BE6	
V2	IF Amplifier	12BA6	
V3	Det. - AVC - AF Amp.	12AV6	

ITEM No.	USE	TYPE	NOTES
V4	Output	50C5	
V5	Rectifier	35W4	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	Packard-Bell PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	150	24163C	PRS150V4020	BBRD4215	TCD485	TDLD-5	TVA-2438	
B	20	150							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	Packard-Bell PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C2	47		N1400	23651						
C3	10000			23631	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C4	10000			23631	BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C5	.15	200		23707	P288N-15		CUB2P15	GEM-2015	2TM-P15	①

① Some versions may use a .1 200V in this application (Part #23707).

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Packard-Bell PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1	500K	½	25062E					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

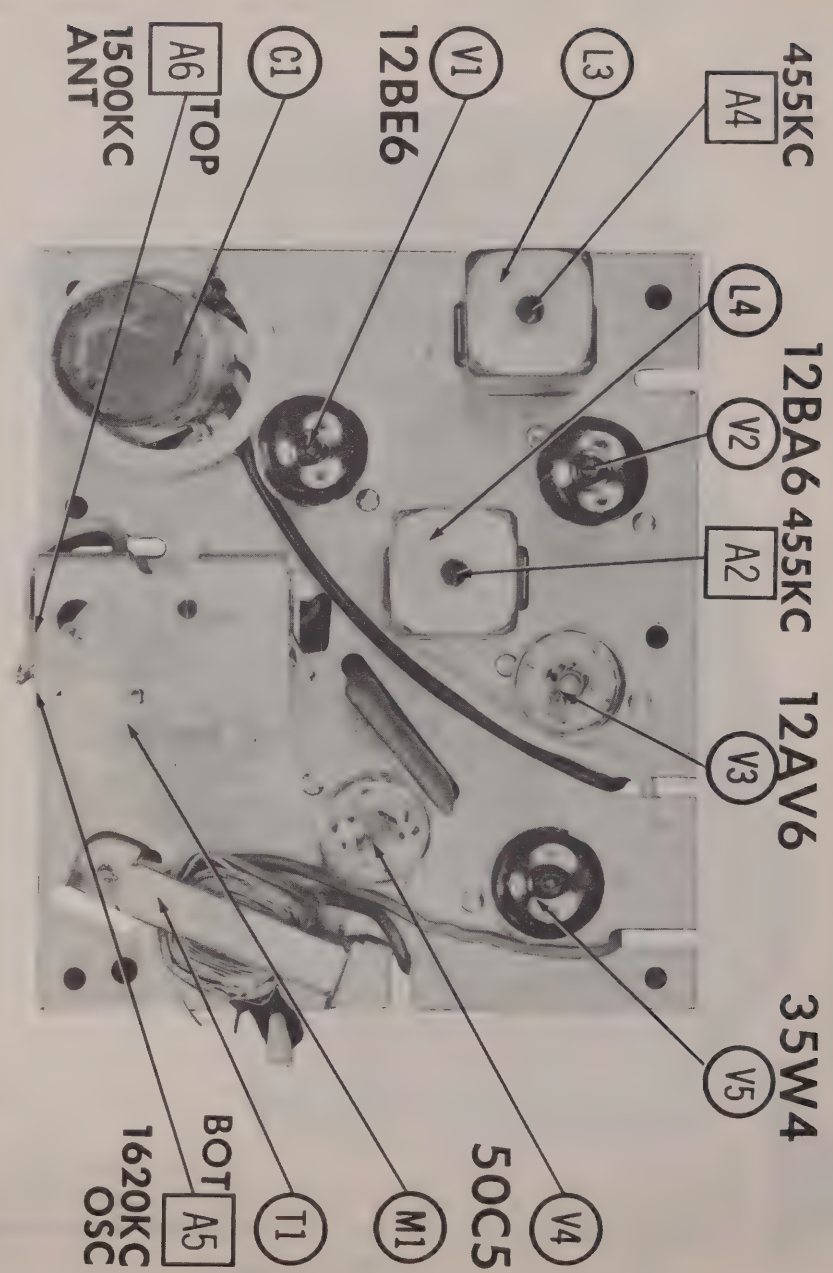
ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R2	22K		73141	
R3	2.2meg		73165	
R4	220Ω		73117	

ITEM No.	RATING		Packard-Bell PART No.	NOTES
	OHMS	WATT		
R5	150Ω		73115	
R6	1000Ω	1	73325	
R7	22Ω		73105	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA						NOTES
		Packard-Bell PART No.	Gramer PART No.	Meissner PART No.	Merit PART No.	Miller PART No.	Ram PART No.	
L1	Loopstick	29361						
L2	Osc. Coil	29157B	14-1074	14-1074				
L3	Input IF	29155	16-6758	16-6758	BC-352	12-C9	RF-1	
L4	Output IF	29156	16-6758	16-6758	BC-353	12-C10	RF-2	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	Packard-Bell PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	2700Ω	3-4Ω	89487	24S53	A-3025	AU-605	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Packard-Bell PART No.	QUAM PART No.	
SP1	4"	PM	3-4Ω	83019	4A1	

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Packard-Bell PART No.	REPLACEMENT DATA
K1	Detector-Audio Couplate	220mmf, 250mmf, 250mmf, 2000mmf, 2000mmf, 5000mmf, 470K, 470K, 6.8meg	23630B	Aerovox PA-113-1 Centralab PC-150 Cornell-Dubilier 116TM1 Sprague DT-1

MISCELLANEOUS

ITEM No.	PART NAME	Packard-Bell PART No.	NOTES
M1	Tuning Cap.	23556	2 Gang, Ant. 14-295mmf, Osc. 12-115mmf

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

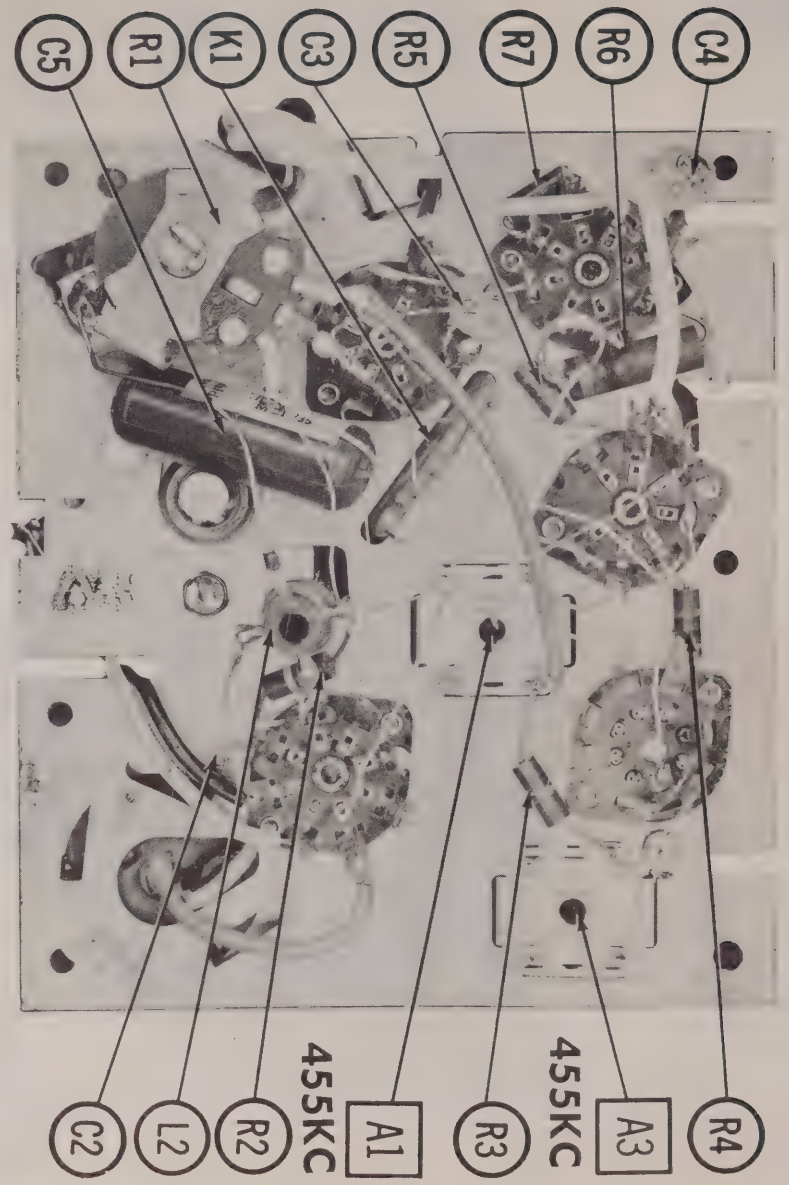
NAME	PART NO.	DESCRIPTION
Knob	52246	Tuning
Knob	52247	Volume On-Off
Cabinet	21152B	

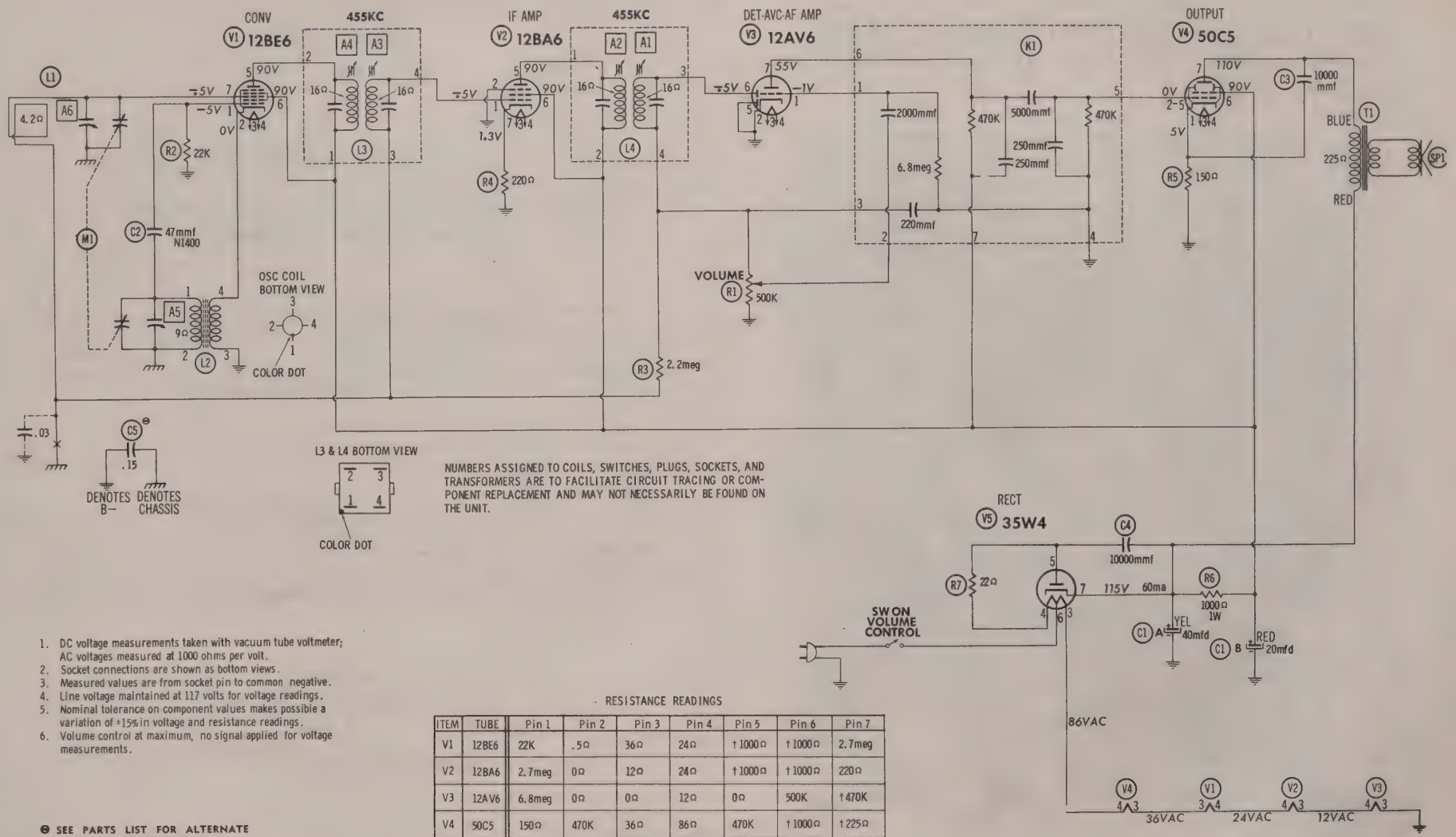
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

CHASSIS BOTTOM VIEW





NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7
V1	12BE6	22K	.5Ω	36Ω	24Ω	†1000Ω	†1000Ω	2.7meg
V2	12BA6	2.7meg	0Ω	12Ω	24Ω	†1000Ω	†1000Ω	220Ω
V3	12AV6	6.8meg	0Ω	0Ω	12Ω	0Ω	500K	†470K
V4	50C5	150Ω	470K	36Ω	86Ω	470K	†1000Ω	†225Ω
V5	35W4	TP	TP	86Ω	120Ω	140Ω	110Ω	¶

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 7 OF V5.
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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PACKARD-BELL MODEL 5R5

PHOTOFACT* Folder

PILOT MODEL
SM-245

PILOT MODEL
SM-245

PILOT MODEL
SM-245

TRADE NAME	Pilot Model SM-245
MANUFACTURER	Pilot Radio Corp., 37-06 36th Street, Long Island City 1, N. Y.
TYPE SET	AC Operated 12 Tube Stereo Amplifier
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 140 Watts, 1.35 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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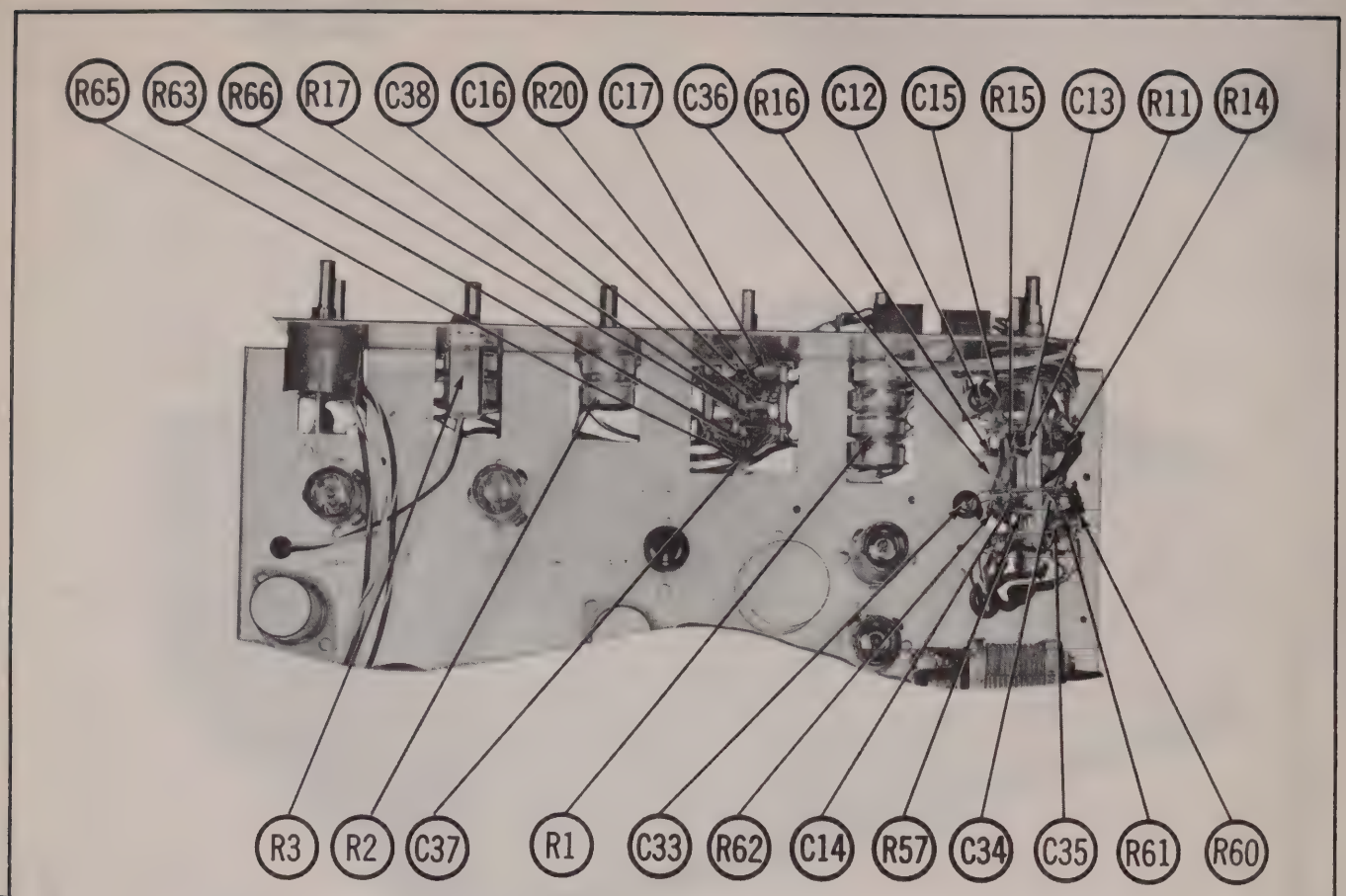
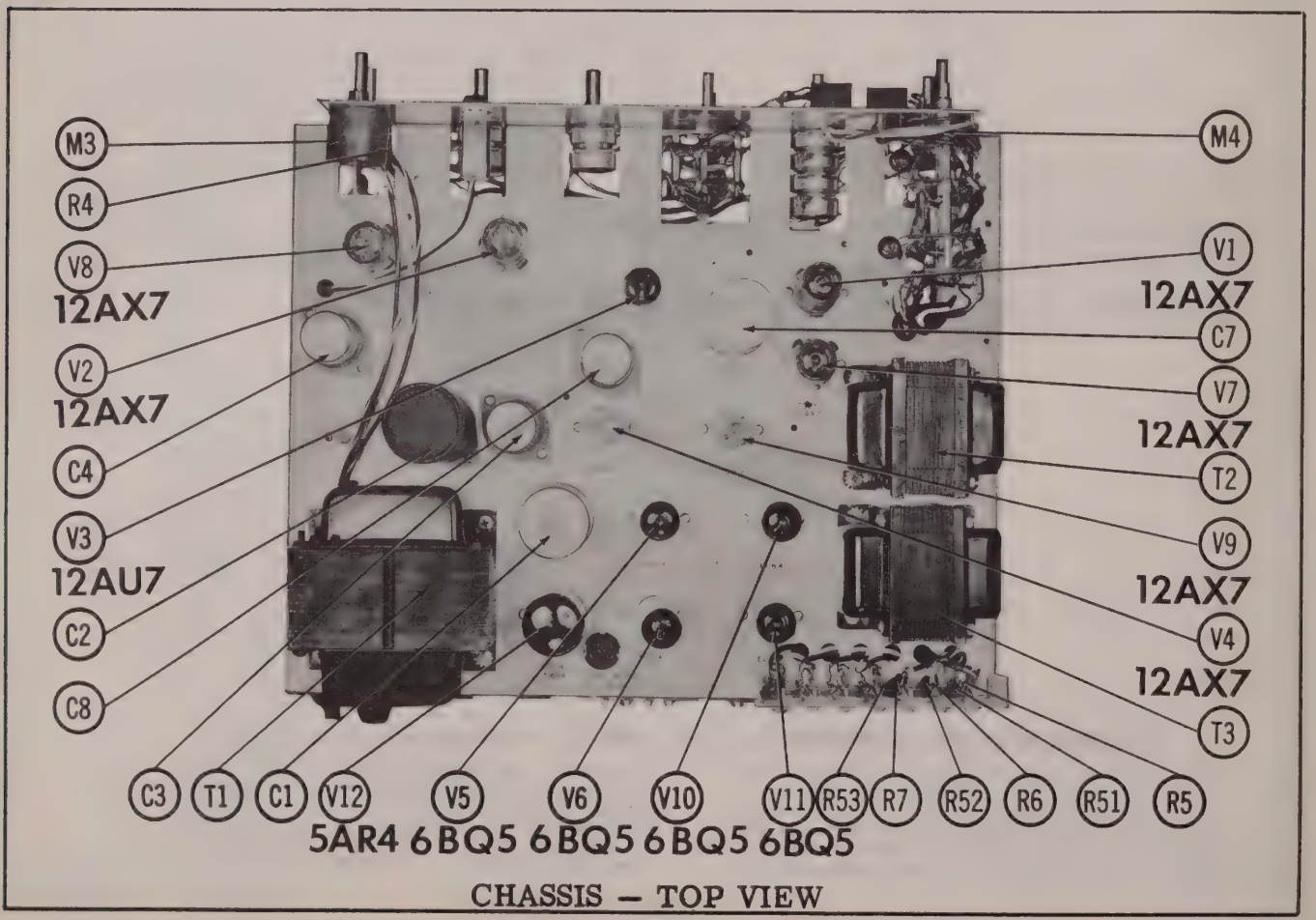
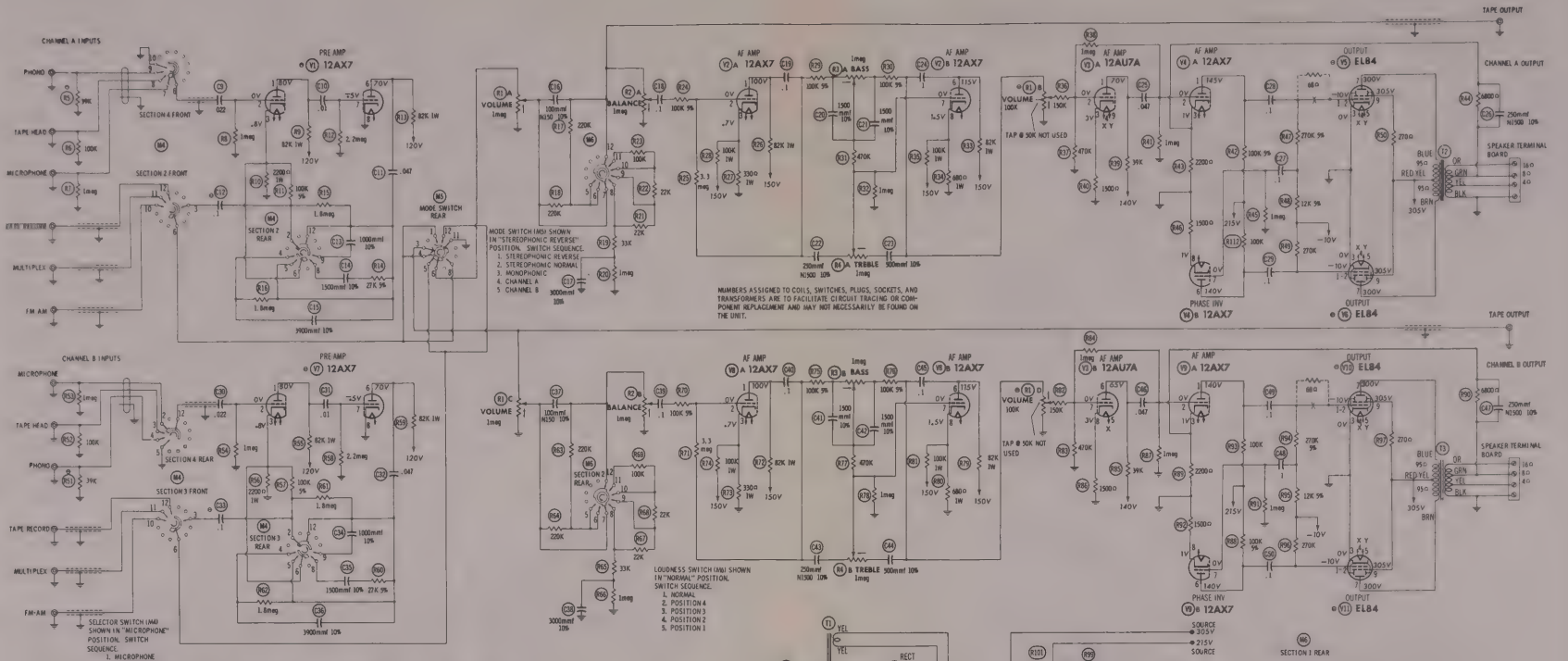


CONTROL PANEL — CAPACITOR & RESISTOR IDENT.



CHASSIS — TOP VIEW



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†115K	1meg	2200Ω	# 0Ω	# 0Ω	†115K	2.2meg	0Ω	# 3.3Ω
V2	12AX7	†100K	1.5meg	330Ω	# 3.3Ω	# 3.3Ω	†100K	400K	680Ω	# 4.3Ω
V3	12AU7A	†70K	110K	1500Ω	#47K	#47K	†70K	110K	1500Ω	#47K
V4	12AX7	†110K	500K	1800Ω	# 4.3Ω	# 4.3Ω	†110K	1meg	1500Ω	# 4.5Ω
V5	EL84 & BO5	380K	380K	0Ω	47K	47K	NC	†195Ω	NC	†370Ω
V6	EL84 & BO5	370K	370K	0Ω	47K	47K	NC	†195Ω	NC	†100Ω
V7	12AX7	†115K	1meg	2200Ω	# 0Ω	# 0Ω	†115K	2.2meg	0Ω	# 2.6Ω
V8	12AX7	†100K	1.5meg	330Ω	# 2.6Ω	# 2.6Ω	†100K	400K	680Ω	# 4.3Ω
V9	12AX7	†110K	500K	1800Ω	# 4.3Ω	# 4.3Ω	†110K	1meg	1500Ω	# 4.5Ω
V10	EL84 & BO5	380K	380K	0Ω	47K	47K	NC	†195Ω	NC	†370Ω
V11	EL84 & BO5	370K	370K	0Ω	47K	47K	NC	†195Ω	NC	†100Ω
V12	GZ34 SA#4	NC	¶	NC	24Ω	NC	26Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V12.
# MEASURED FROM JUNCTION OF M1 AND C3.

1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings
6. All controls at minimum, proper output load connected.

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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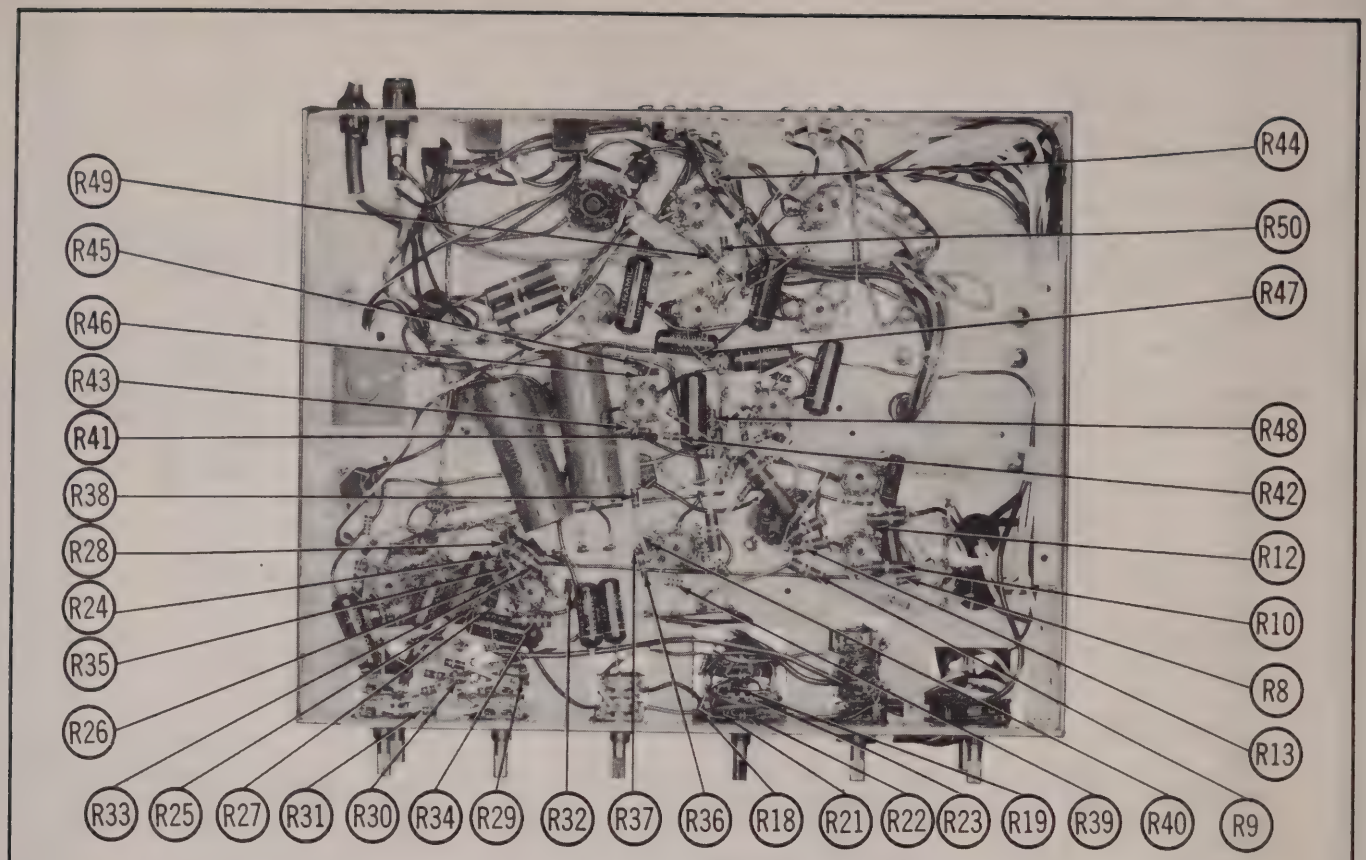
PILOT MODEL SM-743

CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.

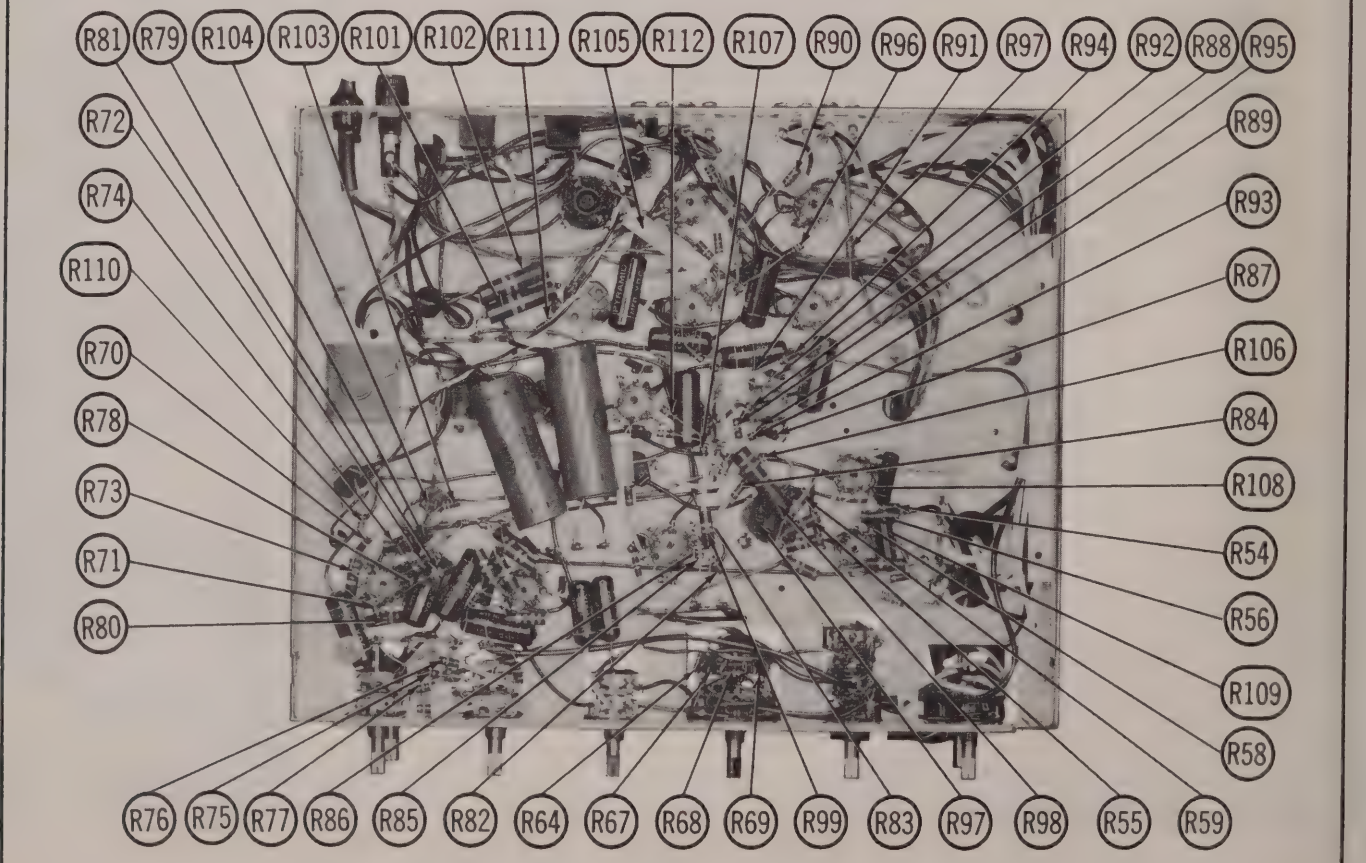
SM-245

PILOT MODEL

FOLDER 17



CHASSIS BOTTOM VIEW - RESISTOR IDENT.



CHASSIS BOTTOM VIEW - RESISTOR IDENT.

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Ch. A Preamplifier	12AX7	(7025 *)
V2	Cha. A Amplifier	12AX7	
V3	Ch. A-Ch. B AF Amp.	12AU7A	
V4	Ch. A AF Amp. -Phase Inv.	12AX7	
V5	Ch. A Output	EL84/ 6BQ5	
V6	Ch. A Output	EL84/ 6BQ5	

ITEM No.	USE	TYPE	NOTES
V7	Ch. B Preamplifier	12AX7	(7025 *)
V8	Ch. B AF Amplifier	12AX7	
V9	Ch. B AF Amp. -Phase Inv.	12AX7	
V10	Ch. B Output	EL84/ 6BQ5	
V11	Ch. B Output	EL84/ 6BQ5	
V12	Rectifier	GZ34/ 5AR4	

* Alternate Type

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	24-124	AFH2-64	B0480	FP229.4	TMD-58	TVL-2675	
B	▲80	400							
C2	1500	25	24-163	AFH1-14-50	A0174	WP068	TMS-1000-25 TD-500-25	TVL-1341	
C3	100	25	A24-154	AFH1-21	XA0241	WP055	TMS-9	TVL-1215	
C4	100	25	B24-154	AFH1-21	XA0241	WP055	TMS-9	TVL-1215	
C5	40	450	①	PRS450V80	BR8045	TC80	TD-80-450	TVA-1716	
C6	40	450	①						
C7A	▲20	350	24-174	AFH3-43-50	C0344	FP376.9	TMT-39	TVL-3786	
B	■40	350							
C	▲40	350							
C8	100	25	C24-154	AFH1-21	XA0241	WP055	TMS-9	TVL-1215	

① C5 & C6 may be a single 80mfd ⓐ 350V (Part #24-177).

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C9	.022	400			P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C10	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C11	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C12	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	①
C13	1000		10%		DI 1000		PM-6D1	JL-210	5BF-D10	
C14	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C15	3900		10%		DI 3900		PM-6D4	JL-239	5BF-D39	
C16	100		N150 10%							
C17	3000		10%		DI 3000		PM-6D3	JL-233	5BF-D33	
C18	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C19	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C20	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C21	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C22	250		N1500 10%							
C23	500		10%		DI 500	MD-501	PM-6T5		5BF-T47	
C24	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C25	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C26	250		N1500 10%							
C27	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C28	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C29	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C30	.022	400			P488N-022	DD-203	CUB4S22	GEM-4122	4TM-S22	
C31	.01	400			P488N-01	D6-103	CUB4S1	GEM-411	4TM-S1	
C32	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C33	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	①
C34	1000		10%		DI 1000		PM-6D1	JL-210	5BF-D10	

CAPACITORS (cont)

ITEM No.	RATING CAP.	RATING VOLT	RATING TOL	REPLACEMENT DATA PILOT PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	NOTES
C35	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C36	3900		10%		DI 3900		PM-6D4	JL-239	5BF-D39	
C37	100		N150 10%							
C38	3000		10%		DI 3000		PM-6D3	JL-333	5BF-D33	
C39	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C40	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C41	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C42	1500		10%		DI 1500		PM-6D15	JL-215	5BF-D15	
C43	250		N1500 10%							
C44	500		10%		DI 500	MD-501	PM-6T5		5BF-T47	
C45	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-S1	
C46	.047	400			P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C47	250		N1500 10%							
C48	.1	200			P288N-1	DF-104	CUB2P1	GEM-201	2TM-P1	
C49	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C50	.1	400			P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C51	10000	1000			DAC-27	DD-103	BYA10S1	B-110	5HK-S1	

① Some versions may use .047mfd in this application.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PILOT PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg	½	36-71			Q11-137		Volume, Ch. A
B	100K	½				M11-128		Volume, Ch. A ①
C	1meg	½				M11-137		Volume, Ch. B
D	100K	½				M11-128		Volume, Ch. B ①
R2A	1meg	½	39-57				† UE4008	Balance, Ch. A
B	1meg	½						Balance, Ch. B
R3A	1meg	½	37-39	B-69	AD47-1meg-S	Q11-137		Bass, Ch. A
B	1meg	½		SR-69	Not Req.	M11-137	■	Bass, Ch. B.
C	Shaft			Not Req.	FS-3	Not Req.		
R4A	1meg	½	37-39	B-69	AD47-1meg-S	Q11-137		Treble, Ch. A
B	1meg	½		SR-69	Not Req.	M11-137	■	Treble, Ch. B
C	Shaft			Not Req.	FS-3	Not Req.		

① Tap ⓐ 50K not used
† "STA-LOC" equivalent: FA16L, RU16R, CS3500
■ "STA-LOC" equivalent: FA16L, RU16L, CS3500

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R5	39K			Note 1
R6	100K			
R7	1meg			
R8	1meg			
R9	82K	1		
R10	2200Ω	1		
R11	100K 5%			
R12	2.2meg			
R13	82K	1		
R14	27K 5%			
R15	1.8meg			
R16	1.8meg			
R17	220K			
R18	220K			
R19	33K			

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R20	1meg			
R21	22K			
R22	22K			
R23	100K			
R24	100K 5%			
R25	3.3meg			
R26	82K	1		
R27	330Ω	1		
R28	100K	1		
R29	100K 5%			
R30	100K 5%			
R31	470K			
R32	1meg			
R33	82K	1		
R34	680Ω	1		

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS (cont)

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R35	100K	1		
R36	150K			
R37	470K			
R38	1meg			
R39	39K			
R40	1500Ω			
R41	1meg			
R42	100K 5%			
R43	2200Ω			
R44	6800Ω			
R45	1meg			
R46	1500Ω			
R47	270K 5%			
R48	12K 5%			
R49	270K			
R50	270Ω			
R51	39K			Note 1
R52	100K			
R53	1meg			
R54	1meg			
R55	82K	1		
R56	2200Ω	1		
R57	100K 5%			
R58	2.2meg			
R59	82K	1		
R60	27K 5%			
R61	1.8meg			
R62	1.8meg			
R63	220K			
R64	220K			
R65	33K			
R66	1meg			
R67	22K			
R68	22K			
R69	100K			
R70	100K 5%			
R71	3.3meg			
R72	82K	1		
R73	330Ω	1		

ITEM No.	RATING OHMS	RATING WATT	PILOT PART No.	NOTES
R74	100K	1		
R75	100K 5%			
R76	100K 5%			
R77	470K			
R78	1meg			
R79	82K	1		
R80	680Ω	1		
R81	100K	1		
R82	150K			
R83	470K			
R84	1meg			
R85	39K			
R86	1500Ω			
R87	1meg			
R88	100K 5%			
R89	2200Ω			
R90	6800Ω			
R91	1meg			
R92	1500Ω			
R93	100K			
R94	270K 5%			
R95	12K 5%			
R96	270K			
R97	270Ω			
R98	15K			
R99	6800Ω	2		
R100	22K	1		
R101	12K	2		
R102	12K	2		
R103	220K			
R104	47K			
R105	100Ω	10		
R106	47K			
R107	100K			
R108	680Ω			
R109	680Ω			
R110	330Ω			
R111	150K			
R112	100K			

Note 1. Some versions may use 100K in this application.

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	RATING SEC. 1	RATING SEC. 2	PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V Ⓐ 1.35A	560 VCT Ⓐ .220A	5V Ⓐ 1.9A	55-63						
	SEC. 3	SEC. 4	SEC. 5							
	6.3VCT Ⓐ 3.4A	30 VCT Ⓐ .65A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	PILOT PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	7300Ω CT	16Ω Taps Ⓐ 8Ω, 4Ω	56-51	22866 ①	A-3128 ①		A-3304 ①	22866 ①	S-24A ①	① Drill new mounting holes
T3	7300Ω CT	16Ω Taps Ⓐ 8Ω, 4Ω	56-55	22866 ①	A-3128 ①		A-3304 ①	22866 ①	S-24A ①	

RECTIFIERS

ITEM No.	RATING CURRENT (Measured)	PILOT PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	NOTES
M1	.62A	110-564			4N33-1C1-RV		

FUSES

ITEM No.	TYPE	RATING	PILOT PART No. FUSE	PILOT PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M2	3AG	2A 125V	111-16		313002. (3AG 2A 125V)	342001	MDL 2	HKP

MISCELLANEOUS

ITEM No.	PART NAME	PILOT PART No.	NOTES
M3	Switch	100-142	Power On-Off-Auto Shutoff
M4	Switch	100-136	Selector (6 Position, Rotary Wafer Type)
M5	Switch	100-140	Mode
M6	Switch	100-14	Loudness

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

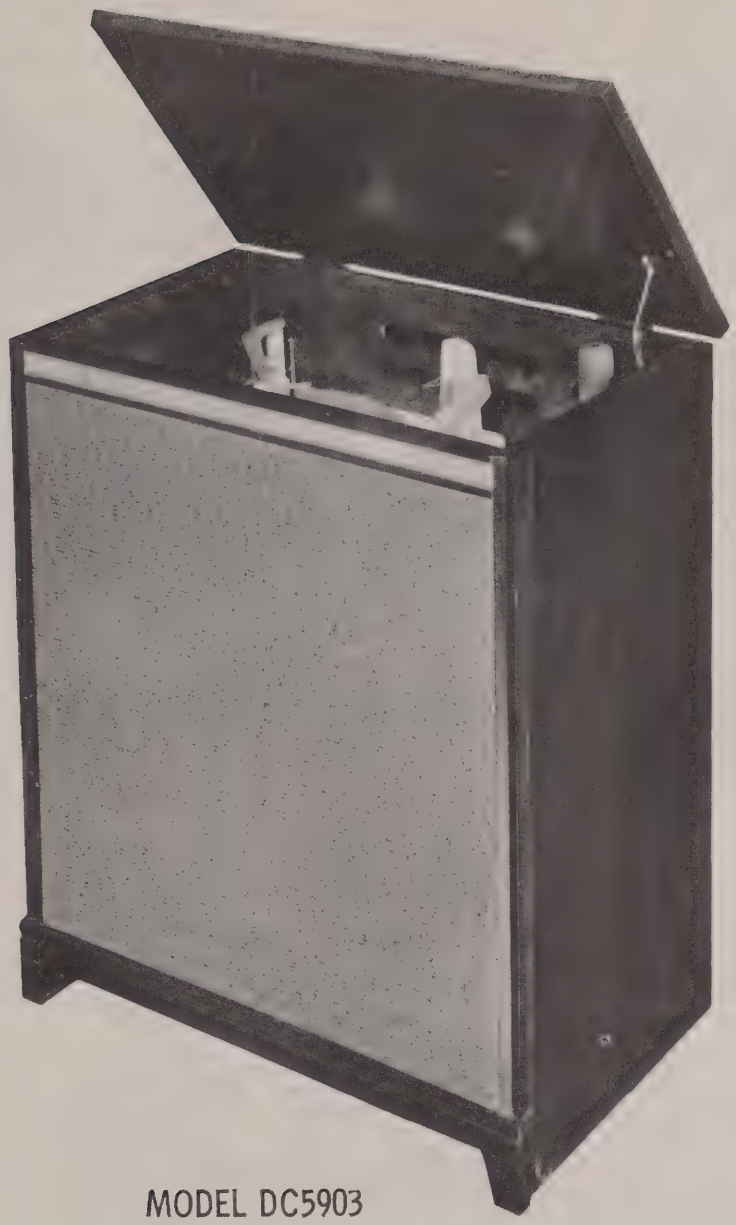
Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT* Folder

EIA MEMBER ELECTRONIC INDUSTRIES ASSOCIATION

TRUETONE MODELS DC5903, DC5905

TRUETONE MODELS
DC5903, DC5905



MODEL DC5903

TRUETONE MODELS
DC5903, DC5905

TRADE NAME	Truetone Models DC5903, DC5905
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Missouri
TYPE SET	AC Operated 3 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110-125 Volts AC, 60 Cycles RATING 28 Watts, .31 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #RC-28 — SEE SIMILAR MONARCH UA8 — PHOTOFACT SET 381 FOLDER 11

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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JS163

DATE 9—59

SET 457 FOLDER 18

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7	
V2	Channel 1 Output	50L6GT	
V3	Channel 2 Output	50L6GT	

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGE PART No.	
C1A	▲40	150	EC-29	AFH3-40	C0350	FP327.89	TMT-144	TVL-3758	
B	■40	150							
C	▲40	150							
C2	10	70	EC-11	SRE70V10	BBR10-90	TC42	TD-10-150	TVA-1304	
C3	10	70	EC-11	SRE70V10	BBR10-90	TC42	TD-10-150	TVA-1304	
C4	2	50		NP-PRS50VNP2	BBR4-50 †	TCN502	TD-4-50 †	TVAS-1301.1*	
					BBR4-50		TD-4-50		

† Connect negative leads together.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	TRUETONE PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C5	270		10%		DI 270	MD-271	L10T27		5GA-T27S 10%*	
C6	680		10%		DI 680	MD-680	1R5T68	JL-368	5GA-T68S 10%*	
C7	2000		10%		DI 2000		1R5D2	JL-220	5GA-D2S 10%*	
C8	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C9	470		10%		DI 470	MD-471	5R5T47	JL-347	5GA-T47S 10%*	
C10	.25	200			P288N-25		CUB2P25	GEM-2025	2TM-P25	
C11	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C12	2000		10%		DI 2000		1R5D2	JL-220	5GA-D2S 10%*	
C13	270		10%		DI 270	MD-271	L10T27		5GA-T27S 10%*	
C14	680		10%		DI 680	MD-680	1R5T68	JL-368	5GA-T68S 10%*	
C15	2000		10%		DI 2000		1R5D2	JL-220	5GA-D2S 10%*	
C16	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C17	470		10%		DI 470	MD-271	5T5T47	JL-347	5GA-T47S 10%*	
C18	.25	200			P288N-25		CUB2P25	GEM-2025	2TM-P25	
C19	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	
C20	2000		10%		DI 2000		1R5D2	JL-220	5GA-D2S10%*	
C21	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	
C22	.05	600			P688N-05	DF-503	CUB6S5	GEM-615	6TM-S5	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

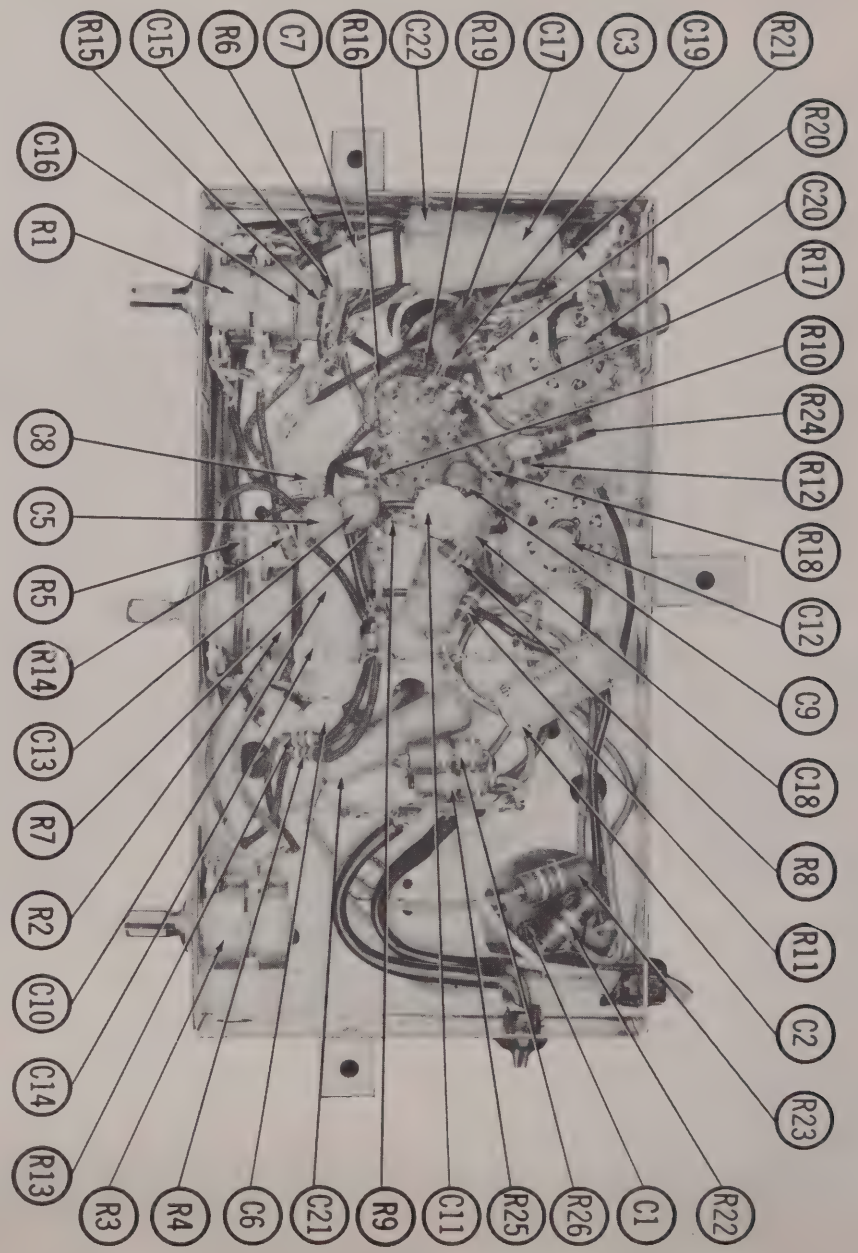
CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	3meg	1/2	VC-152①					Loudness, Chan. 1
B	3meg	1/2	①					Loudness, Chan. 2
R2A	250K	1/2	VC-151 ②				† UE4007	Treble, Chan. 1
B	250K	1/2	②				† UE4007	Treble, Chan. 2
R3A	2meg	1/2	VC-153	B-75	AD47-2meg-S	Q11-139	■	Bass, Chan. 1
B	2meg	1/2		SR-75	Not Req.	M11-139	■	Bass, Chan. 2
C	Shaft			Not Req.	KSS-3	Not Req.		

① Taps ⓐ 1meg, & 2meg (not used).
② Tap ⓐ 125K.

■ "STA-LOC" equivalent: FA26L, RU26L, CS3500
† "STA-LOC" equivalent: FA254T1253, RU254T154, CS3500

CHASSIS BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING OHMS	RATING WATT	TRUETONE PART No.	NOTES
R4	47K			
R5	220K			
R6	100K			
R7	2.2meg			
R8	470K			
R9	270Ω			
R10	47K			
R11	470K			
R12	220Ω	1		
R13	47K			
R14	220K			
R15	100K			
R16	2.2meg			
R17	470K			
R18	270Ω			
R19	47K			
R20	470K			
R21	220Ω	1		
R22	10K	1		
R23	270Ω	2		
R24	22Ω	1		
R25	47Ω	2		Note 1
R26	47Ω	2		Note 2

Note 1. Some versions may use 23Ω 4W in this application. Note 2. Not used in some versions.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA TRUETONE PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2000Ω	20Ω SEC. 2 1-2Ω	AT-46							
T2	2000Ω	SEC. 1 20Ω SEC. 2 1-2Ω	AT-46							

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA TRUETONE PART No.	REPLACEMENT DATA QUAM PART No.	NOTES
SP1	6"	PM	3-4Ω	SPK-62	6A31	
SP2	5"	PM	3-4Ω	SPK-36	5A07	
SP3	3"	PM	4-5Ω	SPK-28	3A15TZ4.7	

SELENIUM RECTIFIER

ITEM No.	RATING CURRENT (Measured)	REPLACEMENT DATA TRUETONE PART No.	FEDERAL PART No.	INTERNATIONAL PART No.	SARKES TARZIAN PART No.	NOTES
M1	.250A	SR-5	1236AH ①	T300 ① TV500 ②	300 ① M500 ②	① Selenium ② Silicon

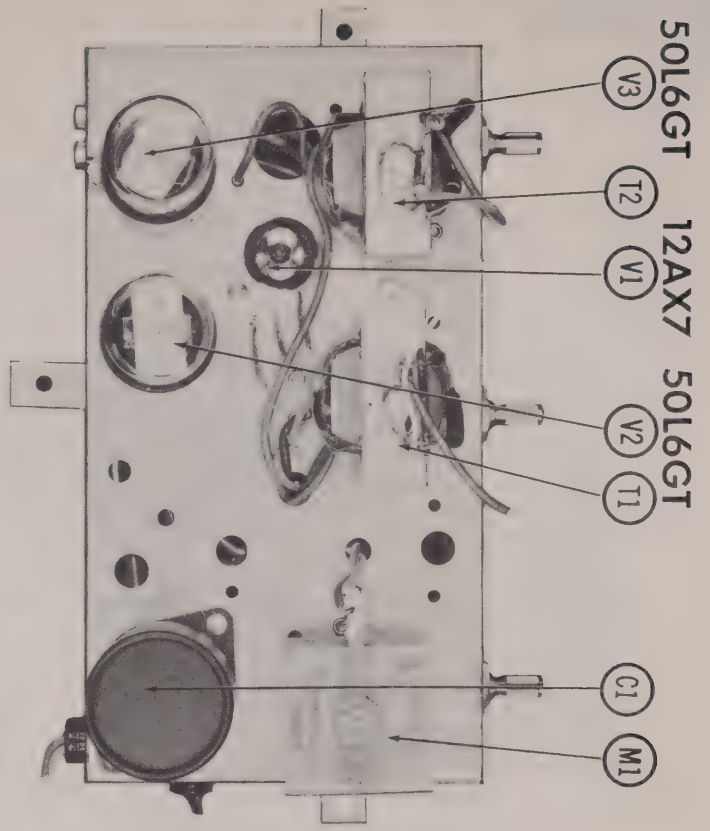
PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA TRUETONE PART No.	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE	JENSEN PART No. CARTRIDGE	JENSEN PART No. NEEDLE	REMARKS
M2	PU-29	13-TB *		66 †	PT-3			* Includes needle & mount. † Includes needle

MISCELLANEOUS

ITEM No.	PART NAME	TRUETONE PART No.	NOTES
M3	Switch	SW-27	Stereo-Monaural (DPDT, Slide Type)

CHASSIS—TOP VIEW



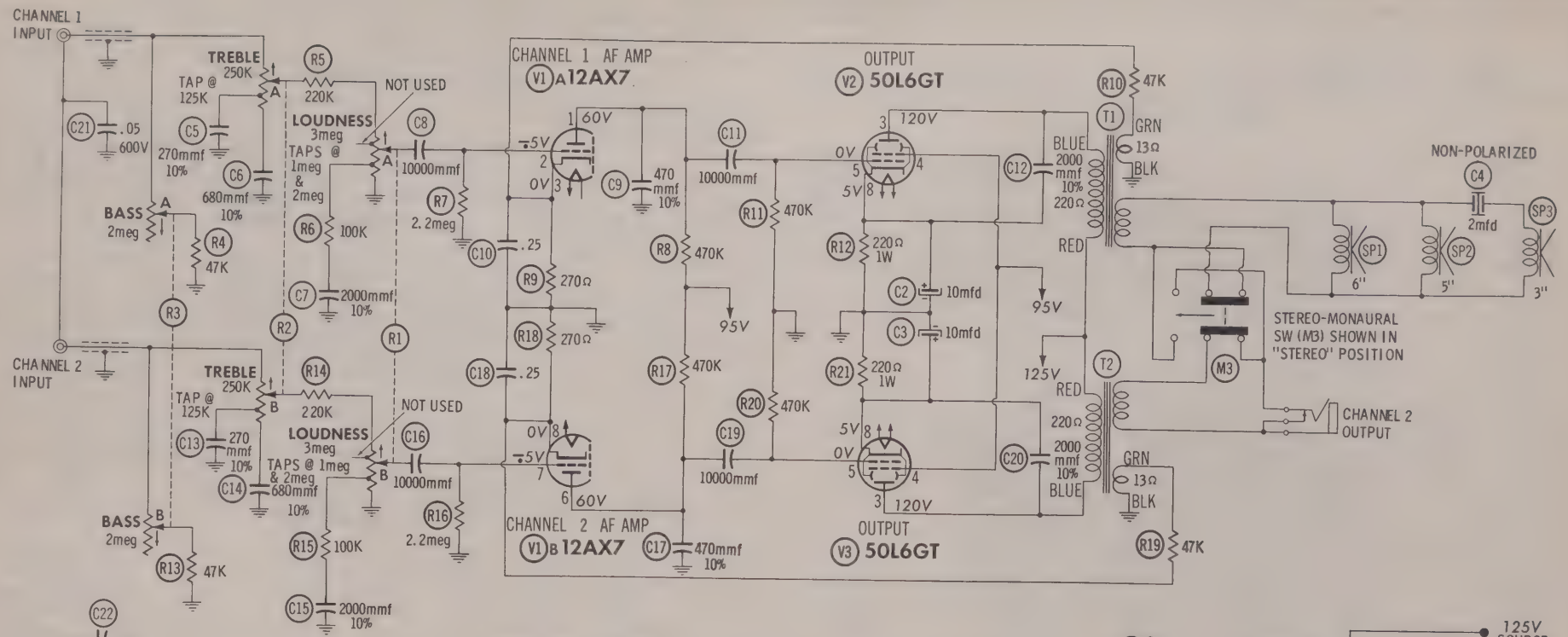
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	K-307	3 Used
Cabinet	CA-321M	Mahogany
Cabinet	CA-321B	Blond
Cabinet Lid	CA-L321M	Mahogany
Cabinet Lid	CA-L321B	Blond

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†480K	2.2meg	270Ω	0Ω	12Ω	†480K	2.2meg	270Ω	6Ω
V2	50LGT	TP	134Ω	†490Ω	†10K	470K	TP	84Ω	220Ω	
V3	50L6GT	TP	62Ω	†490Ω	†10K	470K	TP	12Ω	220Ω	

† MEASURED FROM M1
TP TIE POINT

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TRUETONE MODELS DC5903, DC5905

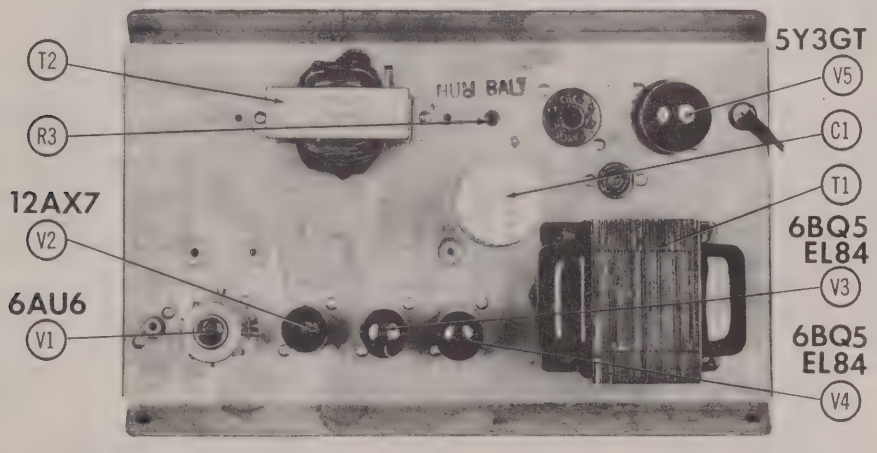
PHOTOFACT* Folder

V-M MODELS
167, 563, 568A

V-M MODELS
167, 563, 568A

TRADE NAME	V-M Models 167, 563, 568A
MANUFACTURER	V-M Corp., Benton Harbor, Michigan
TYPE SET	AC Operated 5 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 - 120 Volts AC, 60 Cycles RATING 68 Watts, .68 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18



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J146

SET 457 FOLDER 19

PARTS LIST AND DESCRIPTIONS

TUBES (GENERAL ELECTRIC, SYLVANIA)

ITEM No.	USE	TYPE	NOTES
V1	AF Amplifier	6AU6A	
V2	AF Amp. -Phase Inv.	ECC83/ 12AX7	
V3	Output	6BQ5	①
V4	Output	6BQ5	①
V5	Rectifier	5Y3GT	

① Alternate type EL84

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	450	12112	AFH3-133	C1070	FP376.8	TMT-133	TVL-3744	
B	■40	450							
C	▲10	25							
C2	10	400	12106	PRS450V10	BR1045	TC72	TD-10-450	TVA-1705	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REPLACEMENT DATA						NOTES
	CAP.	VOLT	TOL	V-M PART No.	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	SPRAGUE PART No.	
C3	.047	400		12009	P488N-047	DF-503	CUB4S47	GEM-4147	4TM-S47	
C4	33				BPD-000033	DD-330	L10Q33	CNO-433	5GA-Q33	①
C5	.1	400		12008	P488N-1	DF-104	CUB4P1	GEM-401	4TM-P1	
C6	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①
C7	10000				BPD-01	DD-103	BYA10S1	B-110	5HK-S1	①
C8	500		10%	12064-10	DI-500	DD-501	BYA10T5	B-350	5GA-T5	①
C9	2	100		12069						

① Part #18337 includes C4, C6, C7, R4, R5, R6, R8 thru R14, R17, R18, R24.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	IRC PART No.	MALLORY PART No.	
R1A	500K	½	12339①				■ UE3972S	Volume. Taps ⓐ 200K & 350K
B	Switch							Power On-Off
R2A	1meg	½	12340②	F1-52			† UE3963	Brilliance
B	1meg	½		R2-52				Bass
R3A	150Ω	1(WW)	12361	WN-201 *	A43-150 *		C200P *	Hum Balance
B	Shaft			AK-30	FKS-1/4		Not Req.	

■ "STA-LOC" equivalent: FA55DT334, OS687, RU16A, IS1000, US-42 (Do not connect rear control in circuit)
† "STA-LOC" Equivalent: FA16A, OS687, RU16A, IS1000
* Ream out mounting hole
① Model 568A uses Part #12348 Model 167 uses Part #12366
② Model 568A uses Part #12347 Model 167 uses Part #12367

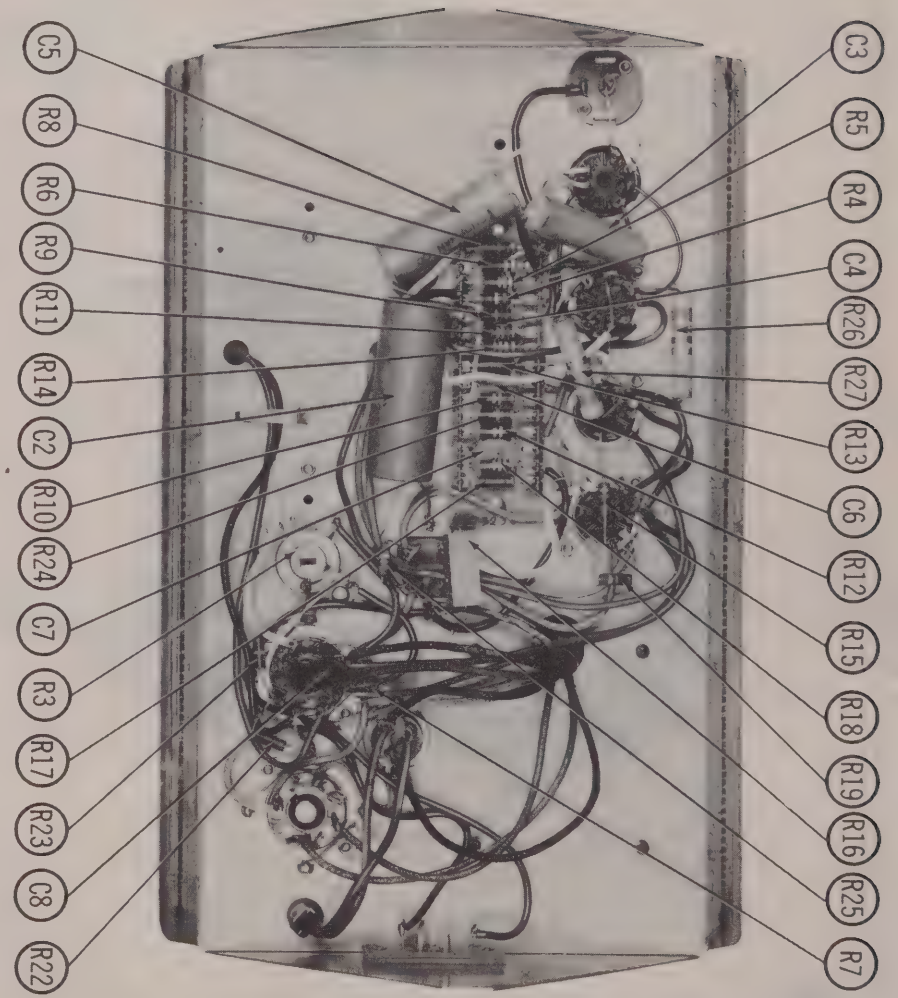
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING		V-M PART No.	NOTES
	OHMS	WATT		
R4	470K			Note 1
R5	390K			Note 1
R6	3300Ω			Note 1
R7	6800Ω			
R8	100Ω			Note 1
R9	1.2meg			Note 1
R10	100K			Note 1
R11	68K			Note 1
R12	100K			Note 1
R13	1000Ω			Note 1
R14	330K			Note 1
R15	1000Ω			
R16	200Ω	2		
R17	1000Ω			Note 1
R18	330K			Note 1
R19	1000Ω			
R20	5600Ω			
R21	3900Ω			
R22	150Ω			
R23	10K			
R24	15K			Note 1
R25	22K			
R26	1.2Ω	1		
R27	1.2Ω	1		

Note 1. Part #18337 includes R4, R5, R6, R8 thru R14, R17, R18, R24, C4, C6 & C7.

CHASSIS BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	V-M PART No.	REPLACEMENT DATA
K1	Loudness Control Network	5000mmf, 5000mmf, 47K, 47K	12569	
K2	Tone Control Network	200mmf, 1000mmf, 1000mmf, 10000mmf, 10K, 100K, 220K	12570	

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA						
	PRI.	SEC. 1	SEC. 2	V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.
T1	117V @ .67A	680 VCT @ .070A	5V @ 2A	12580	24R02U ①			PC8408 ①	24R02U ①	R-11A ①
	SEC. 3	SEC. 4	SEC. 5							
	6.3 VCT @ 2.1A									

① Drill new mounting holes

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA							NOTES
	PRI.	SEC.	V-M PART No.	Halldorson PART No.	Merit PART No.	Ram PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	4500Ω CT	1-2Ω	12581	22S62	A-2905	AU-609	A-3870	22S62	S-55X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	QUAM PART No.	
SP1	3½"	PM	9-10Ω	18558	3A15TZ9.8	
SP2	12"	PM	3-4Ω	18560	12A6A	

PHONO CARTRIDGE

ITEM No.	REPLACEMENT DATA					REMARKS
	V-M PART No.	ASTATIC PART No.		JENSEN PART No.		
		CARTRIDGE	NEEDLE	CARTRIDGE	NEEDLE	
M1	18615-B *	13-T *				* Includes needles

PHONO NEEDLE

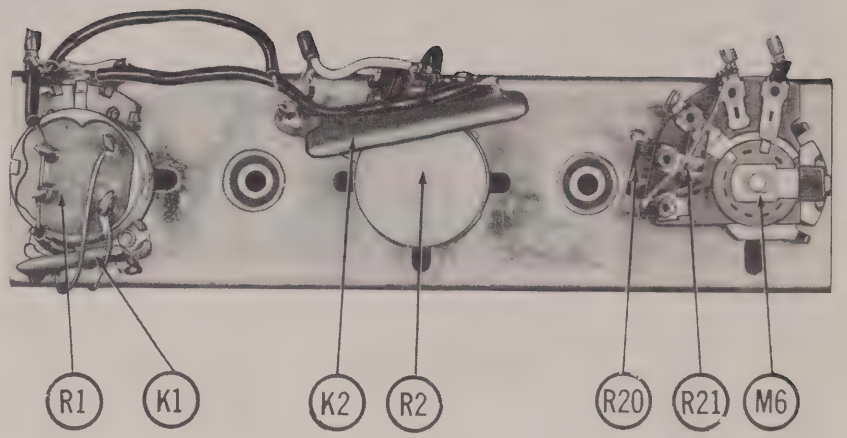
(FOR REPLACEMENT IN ORIGINAL EQUIPMENT CARTRIDGE)

ITEM No.	REPLACEMENT DATA			REMARKS
	V-M PART No.	JENSEN PART No.	WALCO PART No.	
M2			* W-103STSS † or * W-103STDS ♦†	* Includes cartridge, less mounting mechanism † Jewel ♦ Diamond

MISCELLANEOUS

ITEM No.	PART NAME	V-M PART No.	NOTES
M3	Switch	599	Monaural-Stereo, Model 563
M4	Switch	16694	Muting, Model 563
M5	Switch	15120	Phono-Tuner, Model 563
M6	Switch	15118	Acoustic Contour, Model 563
	Switch	15409	Acoustic, Model 167
M7	Switch	467	Power Off-On (Record Changer) Models 563, 568A

CONTROL PANEL



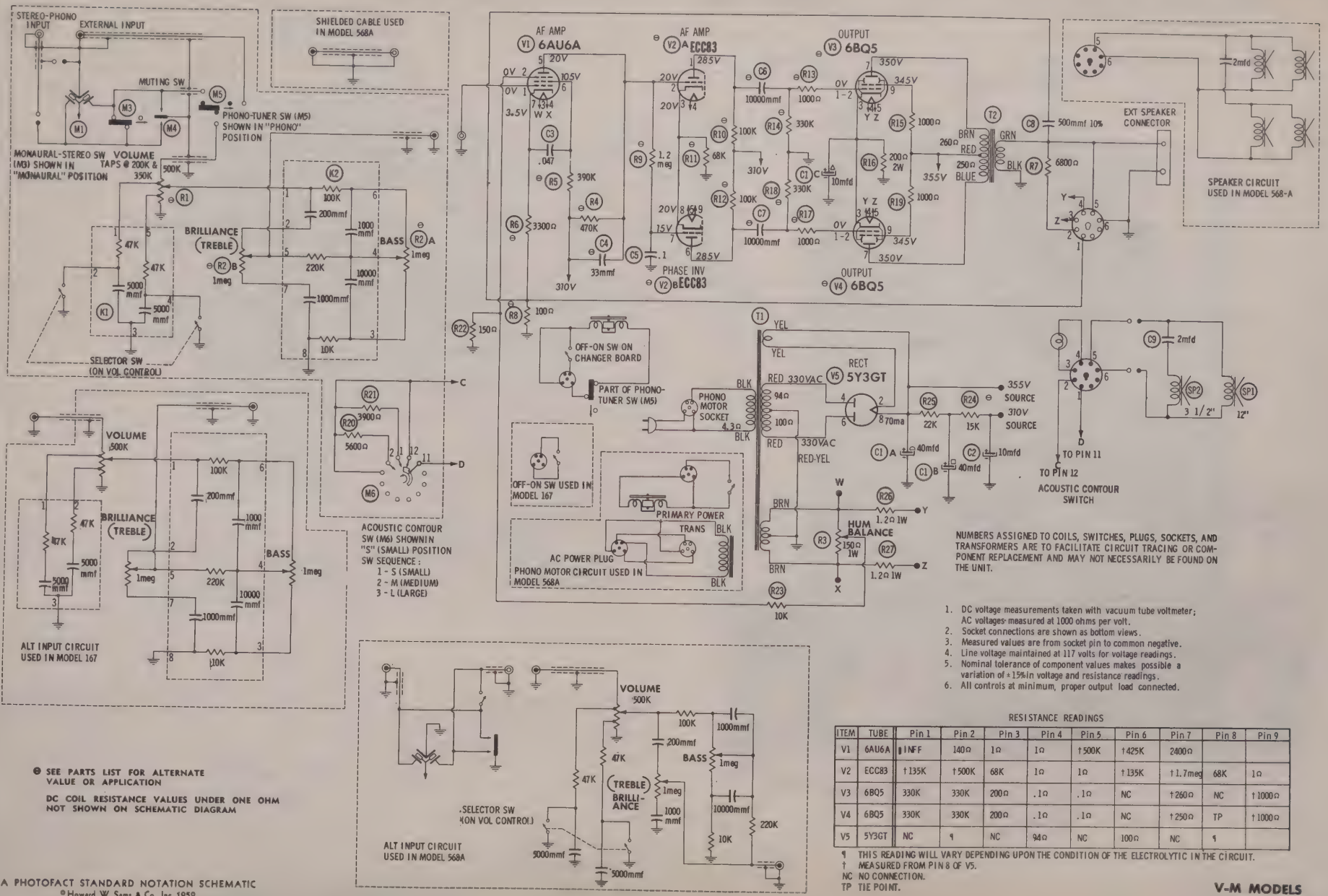
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	18354-B	Volume-On-Off, Model 563
Knob	15133-B	Selector, Model 563
Knob	15135-B	Brilliance, Models 563, 167
Knob	18354-B	Bass, Models 563, 167
Knob	15136-B	Acoustic Contour, Models 563, 167
Knob	16791-A46	On-Off-Reject, Model 563
Knob	16792-A46	Speed Control, Model 563
Knob	16791-A33	On-Off-Reject, Model 568A
Knob	16792-A33	Speed Control, Model 568A
Cabinet	18658-M	Mahogany, Model 563
Cabinet	18870-B	Blonde, Model 167
Cabinet	18870-M	Mahogany, Model 167
Cabinet	18870-W	Walnut, Model 167
Cabinet	18658-B	Blonde, Model 563

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)


STEREO-PHONO INPUT
EXTERNAL INPUT
MUTING SW
PHONO-TUNER SW (M5) SHOWN IN "PHONO" POSITION
MONAURAL-STEREO SW (M3) SHOWN IN "MONAURAL" POSITION
VOLUME TAPS @ 200K & 350K
500K
SELECTOR SW (ON VOL CONTROL)
BRILLIANCE (TREBLE)
BASS
SHIELDED CABLE USED IN MODEL 568A
AF AMP V1 6AU6A
AF AMP V2A ECC83
PHASE INV V2B ECC83
OUTPUT V3 6BQ5
OUTPUT V4 6BQ5
EXT SPEAKER CONNECTOR
SPEAKER CIRCUIT USED IN MODEL 568-A
OFF-ON SW ON CHANGER BOARD
PART OF PHONO-TUNER SW (M5)
PHONO MOTOR SOCKET
RECT V5 5Y3GT
355V SOURCE
310V SOURCE
TO PIN 11
TO PIN 12
ACOUSTIC CONTOUR SWITCH
ACOUSTIC CONTOUR SW (M6) SHOWN IN "S" (SMALL) POSITION
SW SEQUENCE :
1 - S (SMALL)
2 - M (MEDIUM)
3 - L (LARGE)
OFF-ON SW USED IN MODEL 167
PRIMARY POWER TRANS
AC POWER PLUG
PHONO MOTOR CIRCUIT USED IN MODEL 568A
HUM BALANCE
ALT INPUT CIRCUIT USED IN MODEL 167
ALT INPUT CIRCUIT USED IN MODEL 568A

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured at 1000 ohms per volt.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common negative.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AU6A	INFF	140Ω	1Ω	1Ω	†500K	†425K	2400Ω		
V2	ECC83	†135K	†500K	68K	1Ω	1Ω	†135K	†1.7meg	68K	1Ω
V3	6BQ5	330K	330K	200Ω	.1Ω	.1Ω	NC	†260Ω	NC	†1000Ω
V4	6BQ5	330K	330K	200Ω	.1Ω	.1Ω	NC	†250Ω	TP	†1000Ω
V5	5Y3GT	NC	¶	NC	94Ω	NC	100Ω	NC	¶	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V5.
NC NO CONNECTION.
TP TIE POINT.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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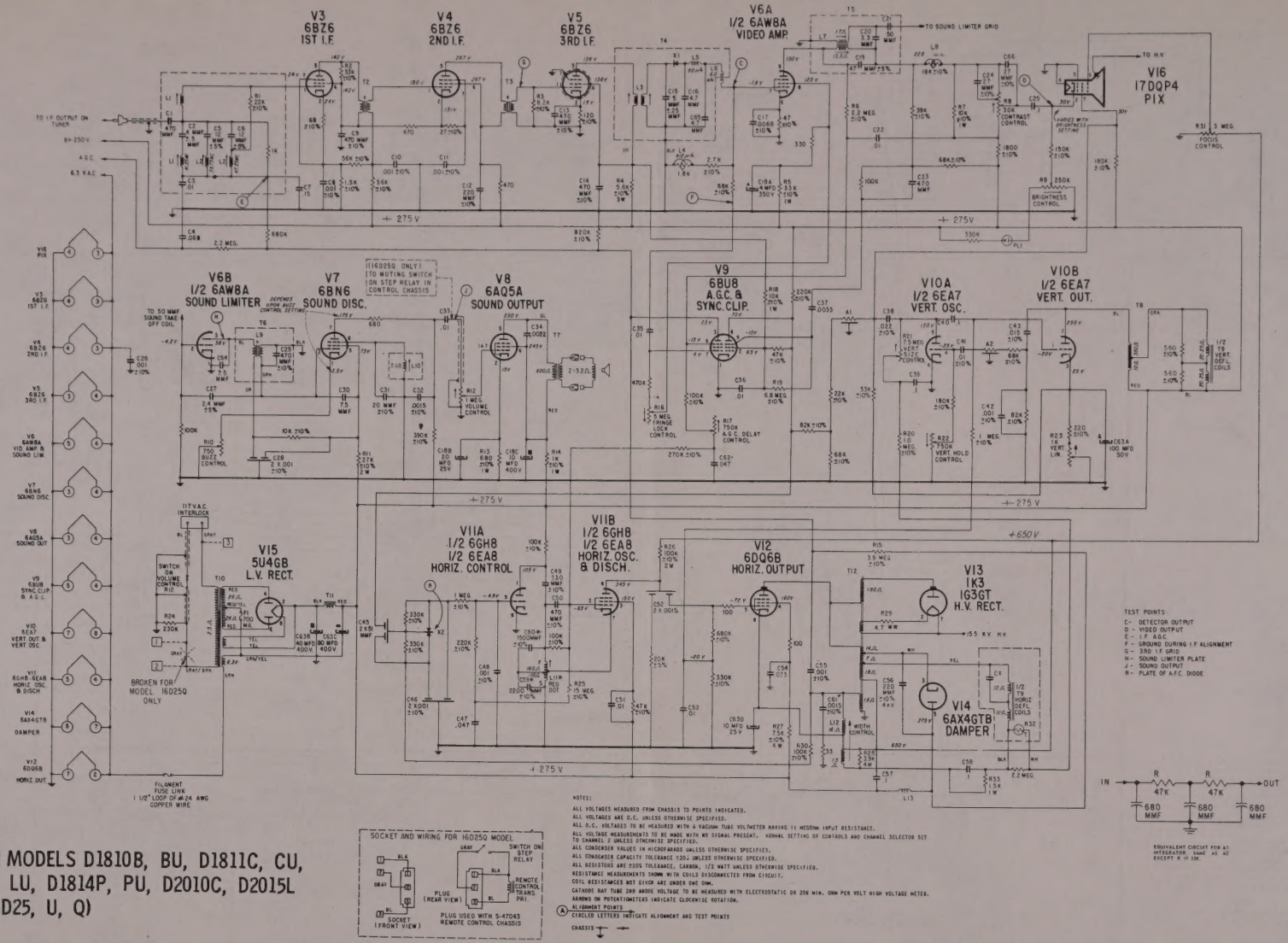
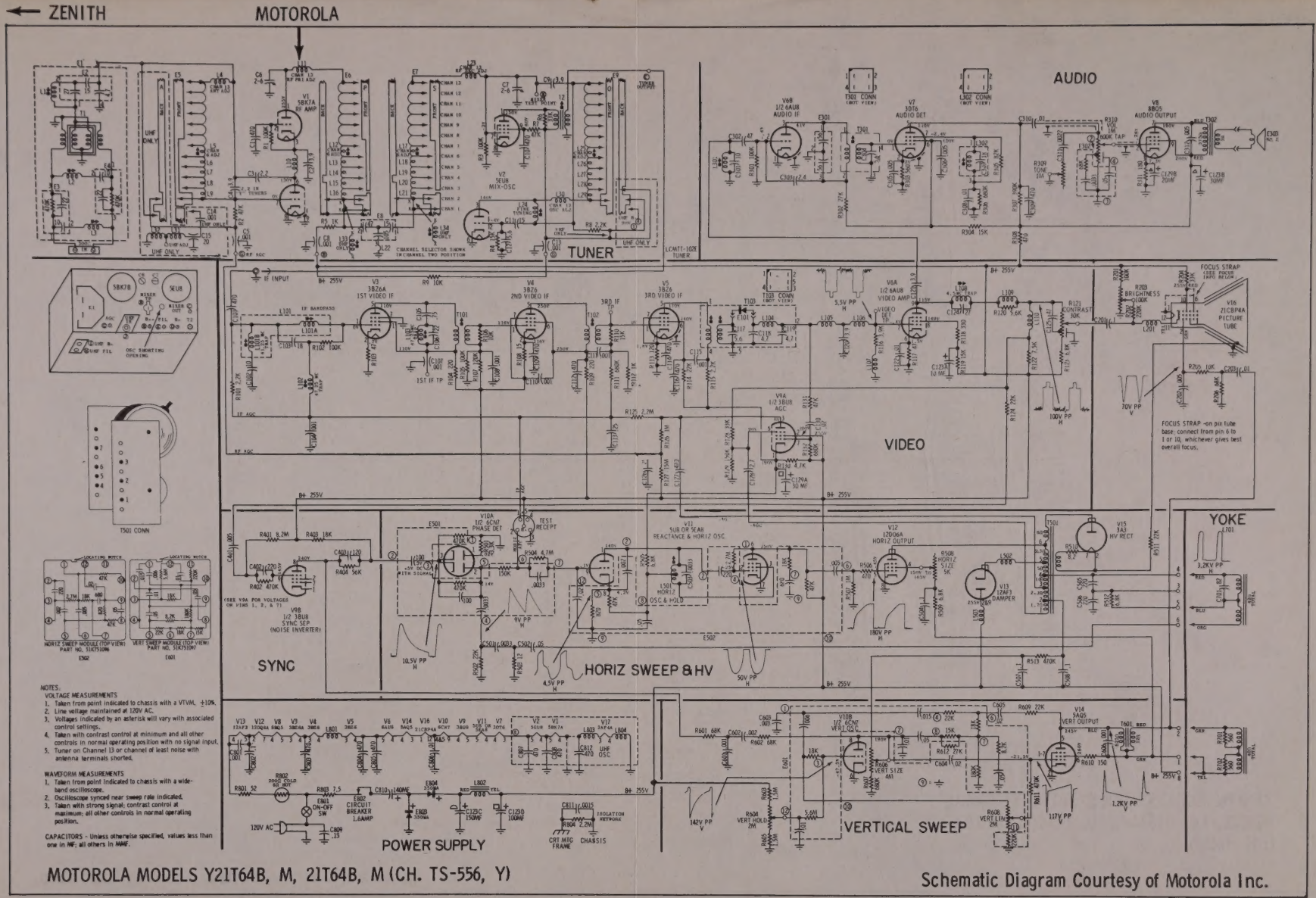
V-M MODELS 167, 563, 568A



ZENITH MODELS D1810B, BU, D1811C, CU, D1812L, LU, D1814P, PU, D2010C, D2015L (CH. 16D25, U, Q)

Schematic Diagram Courtesy of Zenith Radio Corp.


ZENITH
MOTOROLA
TUNER
AUDIO
VIDEO
SYNC
HORIZ SWEEP & HV
VERTICAL SWEEP
POWER SUPPLY
YOKE
IF INPUT
T501 CONN
NOTES:
VOLTAGE MEASUREMENTS
1. Taken from point indicated to chassis with a VTVM, ±10%.
2. Line voltage maintained at 120V AC.
3. Voltages indicated by an asterisk will vary with associated control settings.
4. Taken with contrast control at minimum and all other controls in normal operating position with no signal input.
5. Tuner on Channel 13 or channel of least noise with antenna terminals shorted.
WAVEFORM MEASUREMENTS
1. Taken from point indicated to chassis with a wide-band oscilloscope.
2. Oscilloscope synced near sweep rate indicated.
3. Taken with strong signal; contrast control at maximum; all other controls in normal operating position.
CAPACITORS - Unless otherwise specified, values less than one in MF; all others in MMF.

MOTOROLA MODELS Y21T64B, M, 21T64B, M (CH. TS-556, Y)

Schematic Diagram Courtesy of Motorola Inc.

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